Current Research in Egyptology 2014

Proceedings of the Fifteenth Annual Symposium
University College London & King's College London 2014

ANCIENT EGYPT IN A GLOBAL WORLD

Edited by
Massimiliano Pinarello, Justin Yoo,
Jason Lundock and Carl Walsh

CURRENT RESEARCH IN EGYPTOLOGY 2014

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SKUMSNES, Reinert (University of Oslo) Patterns of Change: Titles of Non Royal Women in New Kingdom Egypt.

SOARES, Felipe (Universidade de Lisboa) In the Antechamber of Persian Invasion. GraecoEgyptian Relations during the 26th Dynasty.

STONER, Jo (University of Kent) The Cultural Life of Monastic Baskets in Late Antique Egypt.

STÖVESAND, Katharina (University College London/University of Cologne) Ancient Egyptian Coffins as Communicative Media for Religious Visual Strategies: Lower and Middle Egyptian Coffins of the Late and Ptolemaic Periods.

TAKENOUCHI, Keita (Waseda University) Some Remarks on the Distribution of Stone Production in Predynastic Egypt: A View from the Analysis of Mudstone Artefacts.

TITZ, Pavel and MUSIL, Jiri (Charles University in Prague) El-Hayz Project: Current State of Knowledge on the Egyptian Western Desert Oasis.

WADE, Janelle (University of Chicago) Pharaonic Economy: a New Commodity-Based Approach to an AgeOld Discussion.

WALSH, Carl (University College London) Establishing the Proper Etiquette: Diplomacy and the Transmission of Court Lifestyles between Egypt and Kerma during the Middle Bronze Age.

WYATT, John (Independent) Bird Hieroglyphs: An Ornithologist’s Viewpoint on their Origin and Subsequent Depiction.

YOO, Justin (King’s College London) Mercenaries, Merchants, Migrants and Marauders: Greeks in Late and Persian Period Egypt.

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KUČOVÁ, Stanislava (Charles University in Prague) Bahariya Oasis: Trade Routes and Economical Situation during Late Roman Period.

MCGUINESS, Kevin (Brock University) Drag Queen: the Liminal Status of the Bust of Queen Nefertiti.

MANSOUR, Ahmed (Bibliotheca Alexandrina) The Journey of Writing in Egypt.

ROHRET, Sasha (University of Chicago) The Giza Necropolis: an Analysis and Spatial Distribution of Age, Sex, and Pathology in Selected Human Remains from the Western Cemetery.

SHAWKI, Nora (Durham University) King Tutankhamun's Facsimile: Recreation as Preservation.

SHEPHERD, Sarah (University of Hull) The Bronze Age Sword Manufacturing in Egypt: the Khepesh.

SIFFERT, Uta (University of Vienna) From Object to Icon: Visual Reflections on and the Designations of Material Culture in the Reliefs and Paintings of Middle Kingdom Tombs.

TITZ, Pavel and MUSIL, Jiri (Charles University in Prague) El-Hayz Project: The Coarse Ware Pottery from the Czech Excavations.

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WATT, Kimberly (University of Cambridge) Does Form Follow Function? What Functions can be Deduced from a Floor Plan?

ZERMANI, Isabel (University of North Carolina at Wilmington) Sharing the Story: Creating a Dialogue with the Past and Present Community.

Foreword

The theme of the fifteenth Current Research in Egyptology conference, ‘Ancient Egypt in a Global World’, is reflected in the ever growing success of this annual event in attracting papers and attendance by young scholars from across the world, and in the extraordinary variety of their interests and perspectives, which are illustrated in the 23 papers published in this volume.

Some common themes are discernible which reveal the new directions being taken in current Egyptological scholarship. First, the chronological range in all the categories of paper from the Early Dynastic through to Roman periods, with a very welcome – for a historian of Roman Egypt – increase in attention to the previously despised ‘late’ period. Second, the interest in technical practicalities of everyday life, including mining and quarrying and their tools, food storage and production, and animal mummification. Third, the aesthetics and social meaning of different forms of writing, and the role of digitisation in advancing this field of study. Fourth, the influence of Egyptian material as well as religious culture on contemporary societies in a global world stretching from India to Britain. It is heartening to note the quality and vitality of research being pursued by tomorrow’s professors in the field, including, despite current problems, the continuing fieldwork projects in Egypt and participation of Egyptian colleagues.

Dominic Rathbone

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Introduction

The fifteenth annual Current Research in Egyptology symposium (CRE XV) returned to London for the first time since 2003, when it was hosted by University College London (UCL). For the first time in CRE's history, two institutions, UCL and King's College London (KCL), jointly hosted the conference. This year's conference maintained the international spirit of previous CREs by bringing together speakers and attendees from all over the world, with over 170 international delegates who presented 75 papers, and 19 posters.

Building from last year's theme 'Crossing Boundaries', CRE XV's committee proposed an equally interregional and interdisciplinary theme of 'Ancient Egypt in a Global World'. This theme works on a number of levels highlighting the current global nature of Egyptological research – which encompasses a variety of different cross-disciplinary approaches, methodologies, and cross-cultural focuses – and it places ancient Egypt in the wider ancient world. The conference theme also showcased London as a global and multicultural hub of Egyptological research, with a pharaonic focus at UCL and a Graeco-Roman and latter periods focus at KCL. Additionally, it also highlighted how researchers and scholars of ancient Egypt can rely on other top-notch institutions in London, such as the School of Oriental and African Studies (SOAS), and museums such as the Petrie Museum and the British Museum. This diverse range and academic variety was reflected in the multiple topics covered in the conference papers and posters, including archaeology, biology, conservation, heritage preservation, social anthropology, and zoology, among others.

The first part of this proceedings volume includes reports from current work at different ancient Egyptian sites (PART I: CURRENT EXCAVATIONS):

AFIFI (Ministry of State for Antiquities, Egypt) and *DASH (Glen Dash Foundation for Archaeological Research)* present the results of recent excavations of four undisturbed 18th dynasty foundation deposits in the western Valley of the Kings.

CIAŁOWICZ ET AL. *(Jagiellonian University)* present the latest results of the Israeli-Polish mission at Tell Erani. Their excavations report includes the recent analysis of the city wall or fortification and finds dating to the Early Dynastic, including a mace-head.

NISHISAKA ET AL. *(Waseda University)* report on the on-going Japanese mission in the western Valley of the Kings to restore and preserve the paintings inside Amenhotep III's tomb.

ODLER (Charles University in Prague) draws on recent excavations at Abusir to discuss the meaning of copper model tools found in burials of Old Kingdom women.

WARD's *(Independent)* update on the on-going excavations at Gebel el Silsila concentrates on the *chaîne-opératoire* identifiable in the quarrying area of the site, dated between the Middle Kingdom and the Graeco-Roman Period.

Winter et al. *(University of Western Australia/University of Evansville/University College London)* present the latest results of the excavations at Tell Timai (Thmuis) in the Delta. Their analysis of the structures, construction techniques, and food production and consumption remains allows the discussion of the available diet at the site.

The second part of the proceedings presents the papers which focus on the cross-cultural theme suggested for the conference (Part II: Cross-Cultural Studies):

Autiero (Sapienza Università di Roma) discusses the presence in India of terracotta figurines from Roman Egypt. Her study concentrates on private piety connected to these small objects and how religious beliefs travelled with long-distance trade routes.

Apostola (University of the Aegean) examines the ancient Egyptian influence of Aegean lion-headed divinities dated between the eighth and the sixth century BC in commercial Mediterranean context.

Mushett Cole (University of Birmingham) discusses Libyan influence in New Kingdom and Third Intermediate Period Egyptian administration, exploring degrees of integration and the extent of Libyan identity preservation.

Judas (University of Pennsylvania) investigates the motif of griffins as symbol of good relationships between the Aegean and Middle Kingdom to New Kingdom Egypt.

Lundock (King's College London) uses the Portable Antiquity Scheme to identify, date, and discuss ancient Egyptian finds from the British countryside. His study also reflects on the cross-cultural impact of these objects in Roman-occupied Britain.

Minniti (University College London/New York University) examines the cross-cultural relationship of *tanagra* figurines from Naukratis and the Mediterranean area, specifically Tarentum, during the later first millennium BC. Her study analyses shared material culture to define local identity in cross-cultural contexts.

Shalaby (Freie Universität) investigates the flint assemblage found in the area of copper and turquoise mines at Wadi Maghara in the Sinai. Her cross-cultural study interrogates the local microcosm to examine patterns of tools production.

The third part of the book includes current research undertaken across the world of Egyptology (Part III: Current Research):

Atherton-Woolham (University of Manchester) present their analysis of late Roman crocodile mummies for the Ancient Egyptian Animal Bio Bank at the Manchester Museum, though non-invasive radiographic imaging techniques.

Bardōnová (Charles University in Prague) investigates Middle Kingdom supply patterns through a study on granaries and silos.

Ezzat (Bibliotheca Alexandrina) highlights issues of heritage conservation in her presentation of the project Digital Library for Inscriptions, Calligraphies and Writings, stressing the sense of continuity in Egyptian identity and the importance of global access through digitisation.

Kilroe (University of Oxford) searches infant jar-burials in ancient Egypt and Sudan to identify differences in regional socio-economic contexts and the interaction between people and local resources.

Kristensen (University of Copenhagen) questions the nature of private gardens depictions in funerary contexts also drawing on philological evidence.

McKnight (University of Manchester) draws on the analysis of votive animal mummies to discuss the process and techniques of mummification in Egypt between the 26th dynasty and the Roman Period.

Nunn (Université Libre de Bruxelles) presents his research project to create a database of polychrome hieroglyphs available online. This project aims to aid the full understanding of the signs, not only from a strictly philological point of view, but also with a visual cognition approach.

Pitkin (Macquarie University) discusses the First Intermediate Period transition from false doors towards funerary stele for dating purposes.

Sbriglio (Università degli Studi di Milano/Freie Universität) and *Ugliano (Università degli Studi di Milano/Università degli Studi di Trento)* reveal the unpublished Italian State Archive in Turin dealing with Ernesto Schiaparelli's reports, diaries, and correspondence during his digging years at Heliopolis for the Missione Archeologica Italiana.

Thorpe (University of Auckland) analyses social behaviour through personal correspondence of complaints in Middle Kingdom to New Kingdom society.

Joint-hosting of CRE XV allowed us to share costs, venues, and to apply for funding from a wider array of sources. We would highly recommend that other potential bidders consider this arrangement in the future. In addition to being the first jointly-hosted conference in CRE's history, CRE XV also had some other notable firsts. Thanks to the generosity of the Egypt Exploration Society (EES) and the Institute of Classical Studies (ICS), we were able to offer bursaries for 22 student delegates to attend the conference. We are happy to see that CRE XVI's organisational committee at the University of Oxford along with the EES and ICS have been able to continue funding these same bursaries and we would urge future organising committees to maintain this.

We went to great lengths to give paper and poster presenters an equal platform to share their research and we feel that this was essential to ensure that young scholars at all stages of research were given an opportunity to participate in the symposium. For this proceedings volume we were able to boost paper submission numbers by allowing both paper and poster presenters to submit their written articles for consideration.

We also used an anonymous external peer review system for the first time. We believe that this benefits the CRE publication volume by helping CRE editors with the article selection process, helps prospective authors by allowing them to get expert feedback and improve their writing, and better prepares young researchers with real-world journal selection processes that they will inevitably encounter in the future. We strongly recommend that future organising committees adopt this stratagem as best practice policies.

Finally, along with consultation from the CRE permanent committee members from 2013–2014 (Kelly Accetta, Gabrielle Heffernan, Virginia LaPorta, and Luigi Prada), we developed the CRE XV website (www.cregytpology.org.uk), Facebook and Twitter pages, with the thought that they would become the permanent CRE website and online social media presence, to be maintained by subsequent organisational committees. This proposal was ratified with a delegate vote at the CRE XV Annual General Meeting and we believe that this will streamline the organisational process for future committees, while also helping to better maintain continuity from year-to-year.

This year's CRE would not have been possible without the generous support of our home universities, UCL and KCL, and their respective sponsoring departments (the Institute of Archaeology at UCL and the Department of Classics at KCL). In addition to the aforementioned student bursary support from the EES and ICS, we wish to thank the Friends of the Petrie Museum (PMF) and the London Centre for the Ancient Near East (LCANE) for each sponsoring a reception at CRE XV.

CRE XV organisation greatly benefitted from the guidance of an informal steering committee comprised of Lucia Gahlin, Jan Picton, Hugh Bowden, Richard Bussmann, Chris Naunton, and Dominic Rathbone. The symposium would not have been as successful without the hard work and efforts of our organisational committee comprised of Courtney Bobik (also our webmaster), Stacy Hackner (poster designer), Ahmed Mekawy, and Carl Walsh at UCL, Yukiko Kawamoto, Jason Lundock, and Federico Ugolini at KCL, and Hany Rashwan from SOAS. We were also given invaluable advice from CRE XIV Cambridge organisational committee members (W. Paul van Pelt, Kelly Accetta, Renate Fellinger, Sarah Musselwhite, and Pedro Gonçalves) throughout the planning process.

Our sincere thanks go to our keynote speakers Alice Stevenson, Richard Bussmann, and Chris Naunton. Many thanks to our panel chairs Sarah Doherty, Lucia Gahlin, Micaela Langellotti, Jan Picton, and John Wyatt, who gave of their time and expertise to moderate sessions. During the conference, student volunteers helped to direct many of the day-to-day mundane minutia that were essential. These student volunteers were from both UCL and KCL.

We are particularly grateful to our expert anonymous peer reviewers, who worked on the first drafts of the papers in this volume, and Beckie Ryan and Caroline Barron, who copy-edited the final drafts of papers for this book. Last but not least, our thanks go to CRE XV poster-presenter and delegate, Isabel Zemani, who patiently designed the original artwork for the cover of this book, and to Robert Templing at KCL who handled all financial payments for us, acting as CRE's 'banker'.

Finally, we send our best wishes to the hosts of the next CRE Symposium to be held in Oxford in 2015. Further details about all CRE symposia are available online at cregyptology.org.uk.

Massimiliano Pinarello (UCL) and Justin Yoo (KCL)
Co-Chairs of CRE XV Organisational Committee

1

The Discovery of Intact Foundation Deposits in the Western Valley of the Valley of the Kings

Afifi Rohim Afifi and Glen Dash

Introduction

Between 2007 and 2011, the Egyptian Supreme Council of Antiquities (now the Ministry of State for Antiquities) undertook a comprehensive programme of excavation and survey in the Valley of the Kings. It was the first such effort in the Valley by an all-Egyptian team of archaeologists. The mission, conducted under the auspices of Zahi Hawass, then Secretary General of the Supreme Council, consisted of Afifi Rohim Afifi as field supervisor and team members Eltayeb Mohamed Elkhodary, Ahmed Mohamed el-Lathiy, Ahmed Ali Mohamed, Hamada Abdel Moeen Kellawy, Mohamed Abdelbadie, Abdelghafar Wagdi, and Ahmed Hemada. Sherif Abdelmonaem provided the ceramics illustrations. Within the scope of excavation, permission was granted to Glen Dash, Joan Dash, Rebecca Dash, and James Bishop of the Glen Dash Foundation to undertake a targeted geophysical survey.

In this paper we discuss the discovery by the archaeological team of four intact foundation deposits from the westernmost end of the western valley of the Valley of the Kings (Fig. 1.1). Foundation deposits are votive offerings placed in, beneath, or around a tomb, temple, or other structure, usually at its commencement (Weinstein 1973, lxix).

Prior work in this part of the western valley

At its west end, the western valley splits into two canyons, one continuing to the west and the other running to the south. The southern canyon contains a multiplicity of workmen's huts, but no known tombs. WV23, WV24, and WV25 are located in the western canyon.

In the summer of 1972, the University of Minnesota Egyptian Expedition (UMEE), under the direction of Otto Schaden (1984, 39), cleared the tomb of Ay (WV23). UMEE also explored the nearby unfinished tomb WV25.

Wilkinson wrote: 'The chief question about WV25 is: for whom was this monument originally intended? […] Opinion has differed over the years, but the most likely answer right now would seem to be none other than the heretic pharaoh, Akhenaten' (Wilkinson 1991, 51).

Wilkinson and Schaden, then co-directors of the University of Arizona's Western Valley of the Kings Project, also surveyed nearby WV24 in 1972. According to Schaden, one item in the tomb appeared to have been untouched since the tomb was abandoned in the 18th dynasty,

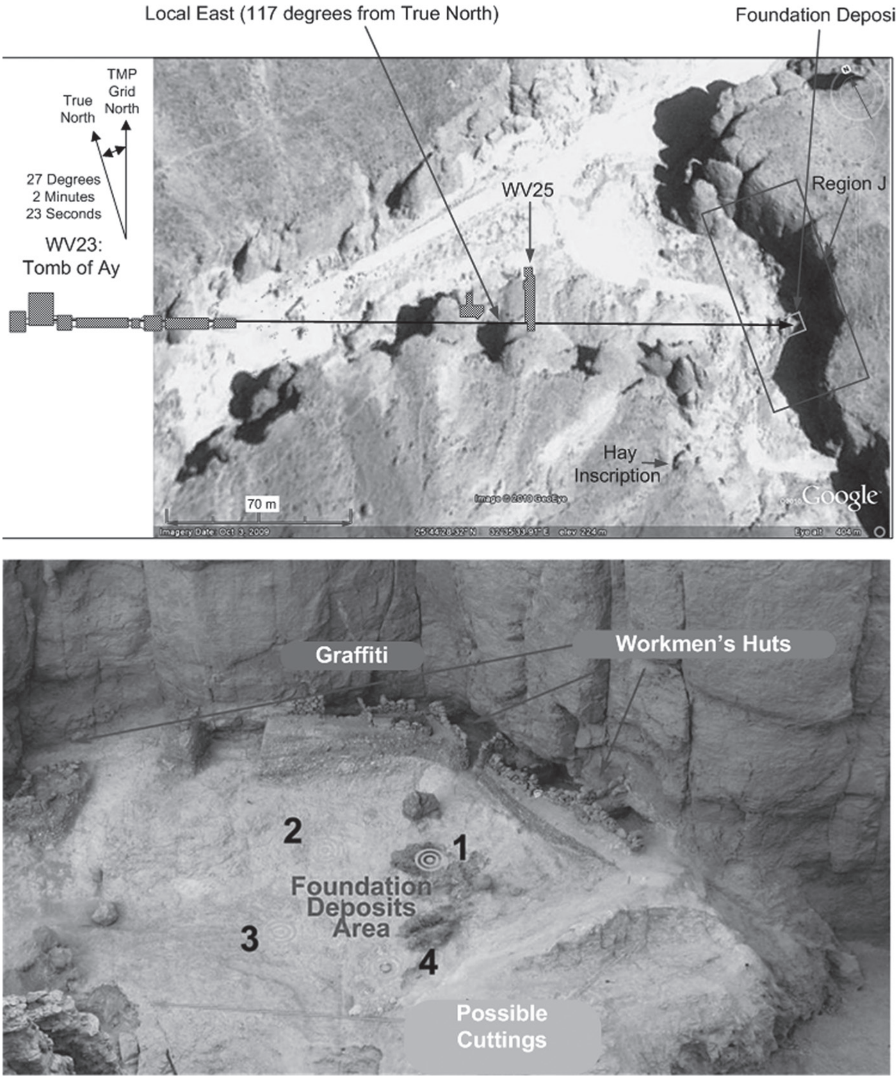
Local East (117 degrees from True North)
Foundation Deposits
TMP Grid North
True North
27 Degrees 2 Minutes 23 Seconds
WV23: Tomb of Ay
WV25
Region J
Hay Inscription
70 m
Google
Graffiti
Workmen's Huts
1
2
3
4
Foundation Deposits Area
Possible Cuttings

Figure 1.1. Location of the foundation deposits. Top: Relationship between the deposits and the tombs. Photo courtesy Google Earth. Bottom: Completed excavations in Region J viewed from the southwest. Photo courtesy the Ministry of State for Antiquities. Both photos used with permission.

a wooden mallet. 'It was never recovered. […] This lends support to the notion that the tomb may have been prematurely (and perhaps even abruptly?) abandoned' (Schaden 1991, 58). Wilkinson and Schaden believe that WV24 was intended either to be a storage annex for WV25, the tomb of an important family member or courtier of the king (Reeves and Wilkinson 1996, 182; Harwood 2013, 51).

In 2000, Wilkinson and the University of Arizona Egyptian Expedition returned to the western valley in search of foundation deposits. To the east of WV25, the expedition found an empty pit set into the hard-packed grey-white rock and desert clay, which is typical of this area. The pit was 20–30 cm deep and 40–45 cm in diameter, and probably once held a foundation deposit (Wilkinson 2004, 202).

Location of the newly-discovered foundation deposits

Figure 1.1 shows the location of the newly-discovered foundation deposits in an orientation following the Theban Mapping Project (TMP) maps of the area (Weeks 2005, 12). These are rotated about 27 degrees clockwise from true north (see the north arrows at the upper left and right of Fig. 1.1). The Theban Mapping Project chose to orient their maps with the monumental axis of Karnak Temple, which is set perpendicular to the Nile (Belmonte *et al.* 2009, 265, fig. 8.42; Goodman 2005, 3). In this orientation, river alignments are easier to identify; and so common in Egypt that the direction of the Nile in a given area can be thought of as 'local north' (Belmonte *et al.* 2009, 215). The axis of WV25 runs parallel to the river and therefore parallel to the local north. The tomb of Ay (WV23) is set perpendicular to the river and runs local east-west. A line has been drawn on Fig. 1.1 from the tomb of Ay to the newly-discovered foundation deposits. This line too runs local east-west.

The process of discovery

At the beginning of work in this part of the western valley, the team mapped a multiplicity of workmen's huts. Beneath the huts, in an area they designated as Region J, they found the first deposit. The team eventually cleared the surrounding area down to bedrock, finding a total of four deposits arrayed around a central hut, designated J12. As shown in the section in Fig. 1.2, hut J12 was built over two layers of soil, each composed of clay, silt, and sand,

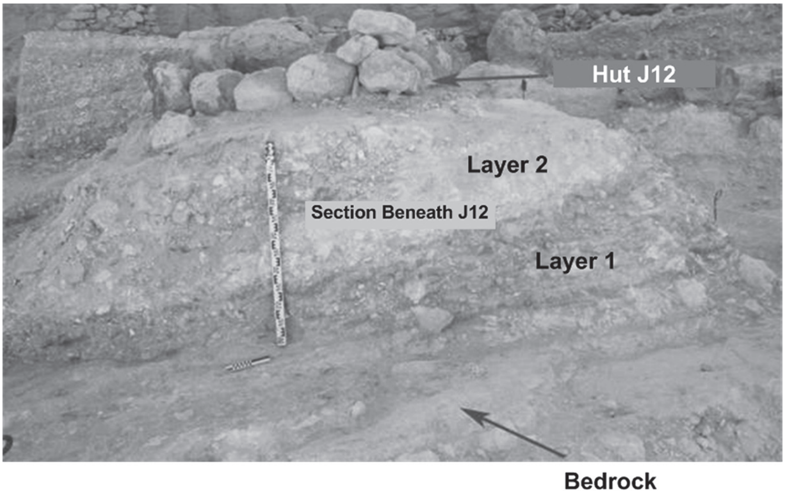

Figure 1.2. Hut J12 before its removal. Photograph used with the permission of the Ministry of State for Antiquities.

with limestone and chert inclusions. The lower layer (Layer 1) is darker and more irregular in elevation. Layer 1 may have been the product of natural processes, whereas Layer 2 may have been laid down deliberately to provide a level surface for the construction of the huts in this area.

Description of the foundation deposits

Figures 1.3–1.8 show the contents of the four deposits. The team found that the placement of artefacts in these deposits (Fig. 1.3, top left) was similar to their placement in the deposits found by Howard Carter in front of the tomb of Amenhotep III (WV22). Carter reported that objects there were 'placed *en masse*; the only visible order being that flesh offerings were always on top and were followed with pottery' (Thomas 1966, 101 n. 178).

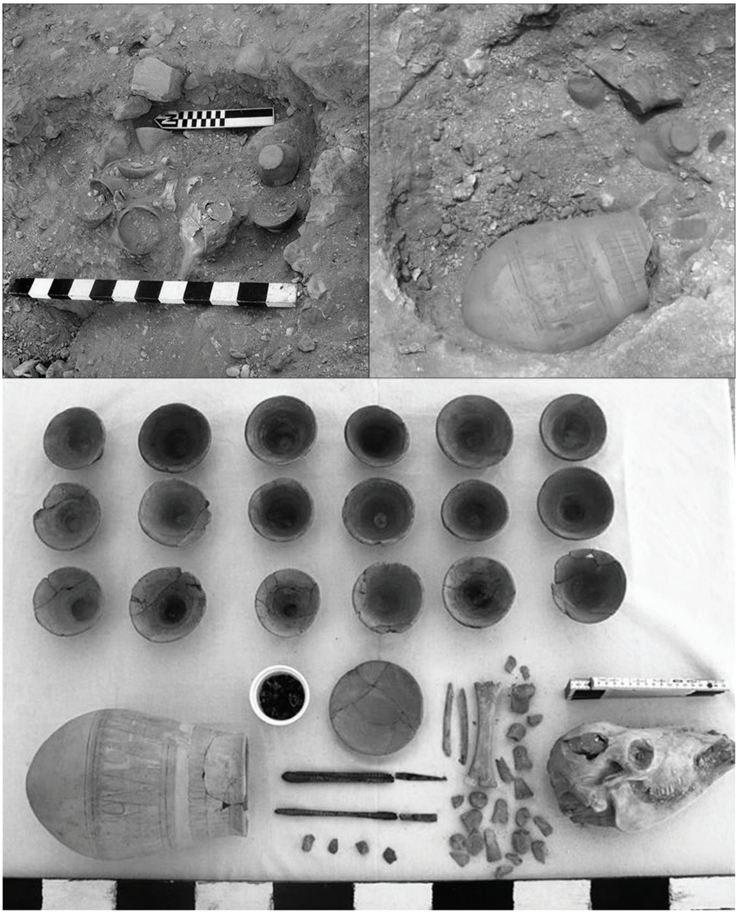

Figure 1.3. Contents of the foundation deposits. Upper left: A deposit as found. Upper right: Blue painted vase of Deposit 4. Bottom: Contents of Deposit 4. Ruler and coffee cup shown for scale. Photographs used with the permission of the Ministry of State for Antiquities.

The Egyptians created the southeast deposit, Deposit 1, by cutting through the soil layer into the bedrock. It contained 16 flat-bottomed offering bowls, one dish, and one ovoid jar with long neck (Fig. 1.4). Deposit 2, cut into the soil layer, held 15 flat-bottomed offering bowls (Fig. 1.5) and the poorly preserved skull of a bovine. Deposit 3, more complex, was cut into the soil layer and held 12 flat-bottomed offering bowls, one ovoid long necked jar (Fig. 1.6), seeds, a poorly preserved bovine skull, and two miniature tools with wooden handles. Deposit 4, cut through

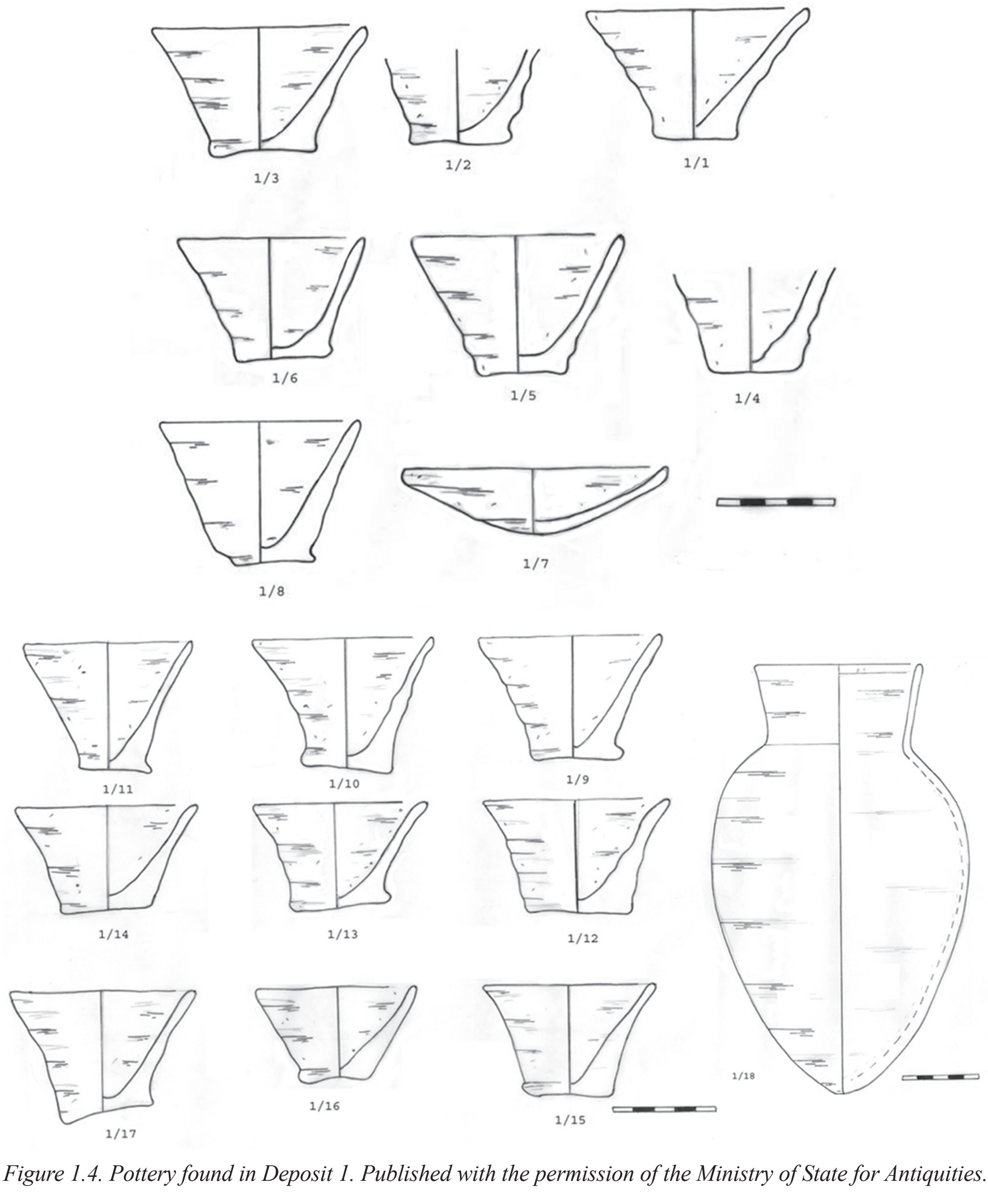

Figure 1.4. Pottery found in Deposit 1. Published with the permission of the Ministry of State for Antiquities.

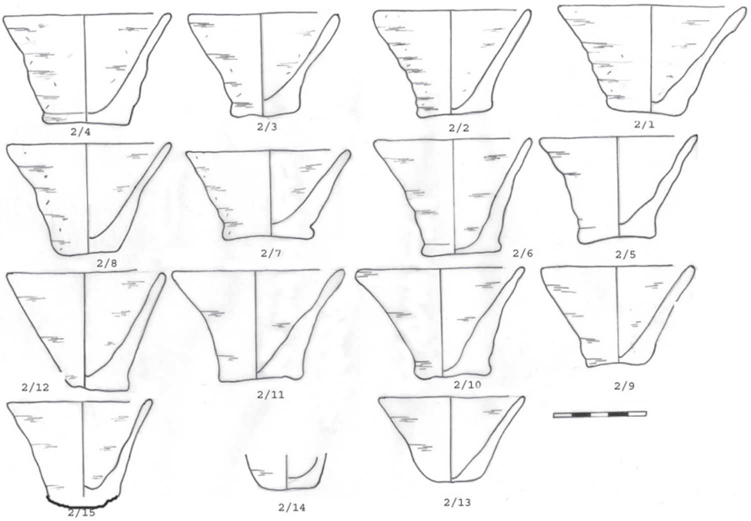

Figure 1.5. Pottery found in Deposit 2. Published with the permission of the Ministry of State for Antiquities.

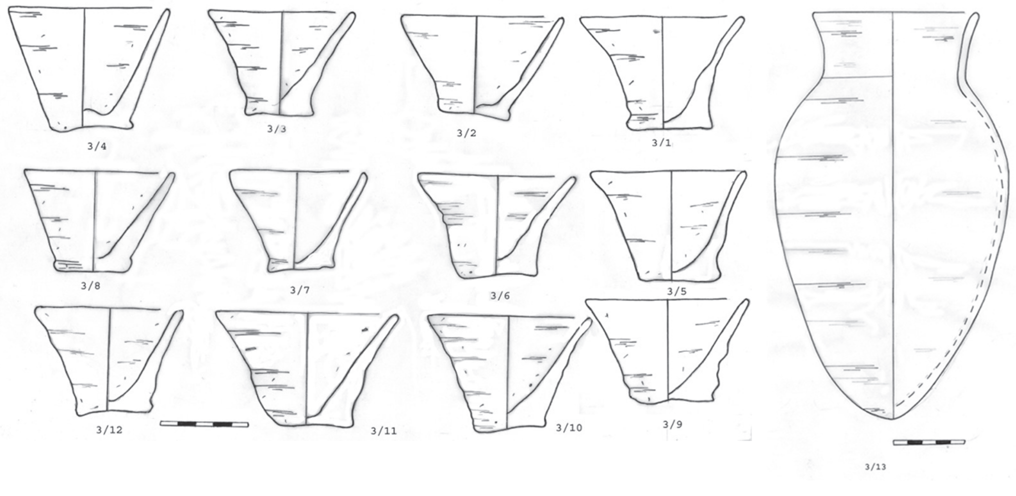

Figure 1.6. Pottery found in Deposit 3. Published with the permission of the Ministry of State for Antiquities.

the soil and into the bedrock, held 18 flat-bottomed offering bowls, one dish, a blue painted jar with a rounded base (Fig. 1.7), two miniature tools with handles, and a well preserved bovine skull. All the deposits were between 0.4 and 0.6 m in diameter.

The blue painted jar and the tools (Fig. 1.8) allow us to date these deposits to the 18th dynasty. The blue painted pottery first appears in the mid-18th dynasty (Rose 2007, 18). Miniature tools with attached wooden handles are common in foundation deposits of the 18th dynasty, but are practically unknown for the 19th and 20th dynasties, and none from those two dynasties have been found in the Valley of the Kings (Weinstein 1973, 232).

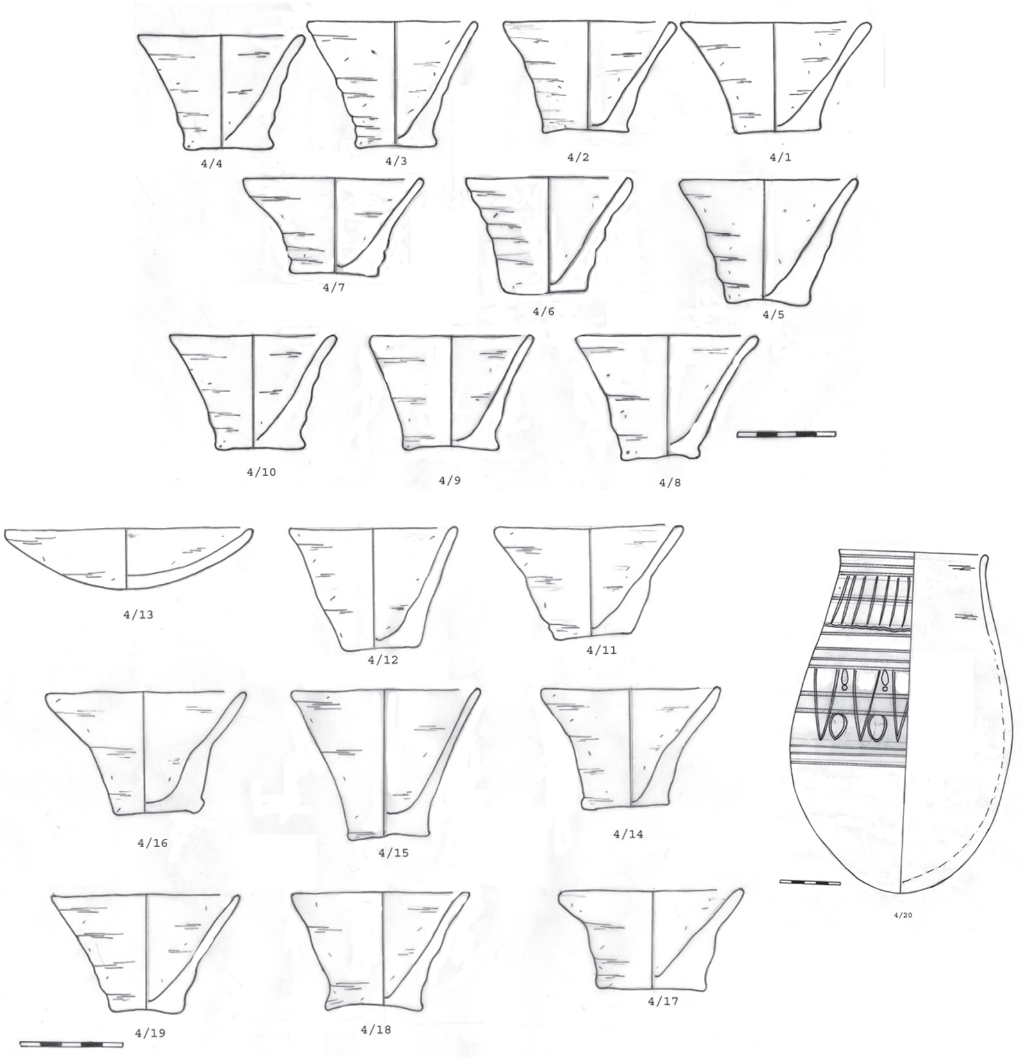

Figure 1.7. Pottery found in Deposit 4. Published with the permission of the Ministry of State for Antiquities.

The search for a tomb

The team cleared the bay surrounding the deposits from the roadway to the eastern escarpment wall, leaving only the necessary supports for the workmen's huts that did not need to be removed. No tomb, nor convincing evidence of a tomb commencement, was found. It is the first time in the valley's history that foundation deposits not immediately associated with a tomb were found. In the search for the tomb, the team also explored the western escarpment wall across the southern canyon from the foundation deposits. Here, in a cleft in the wall, the team encountered and re-recorded Carter Graffito 1517 (Fig. 1.9). The inscription reads: 'The hut of the deputy Hay

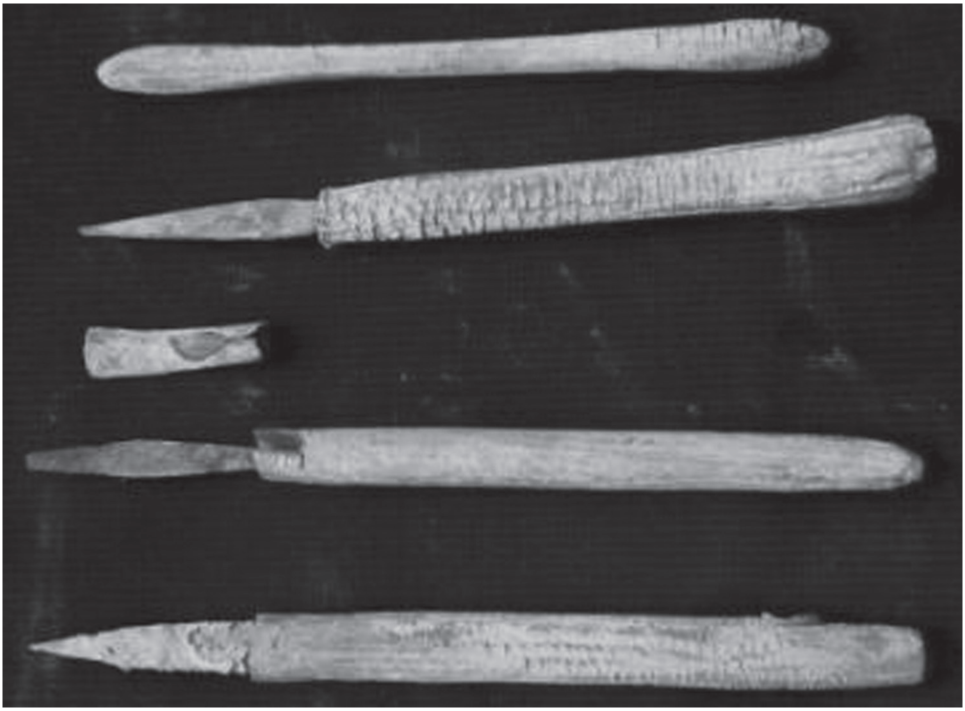

Figure 1.8. Miniature tools found in the foundation deposits. Photograph used with the permission of the Ministry of State for Antiquities.

Totosherry, his son the scribe Amenenakht, his son Amennakht, and his son [Nebnufer]'. Hay, who used the sobriquet Totosherry, is first attested during the reign of Rameses III (Davies 1999, 69). In his tomb in Deir el-Medina, TT 267, Hay described himself as: 'deputy of the workforce in the Place of Truth on the West of Thebes and chief craftsman of the Lord of the Two Lands in the House of Eternity, the temple scribe in the estate of Amun, Lord of Opet' (Davies 1999, 67).

Hay left other inscriptions in this part of the valley, leading Peden (2001, 211) to conclude that: [T]he absence of textual graffiti naming any other workmen in the immediate vicinity of this shady grotto […] might suggest that Hay held this area of the royal wadi to be his own. One can imagine him taking refuge in his private sanctuary, well away from his fellow-men, at need.

In 2010, the archaeological team asked the Glen Dash Foundation for Archaeological Research to undertake a ground-penetrating radar survey of the area. The geophysical team used a Sensors and Software pulseEkko Pro system with 200 MHz and 50 MHz antennas. Most of the results have been published elsewhere (Dash 2009, 1; Dash 2010, 1). However, one set of findings is of particular significance to this discussion. North and west of the tomb of Ay, the geophysical team detected several distinct anomalies indicative of pit tombs. The archaeological team excavated the area down to bedrock and found two squared and levelled sections of bedrock (Fig. 1.10). These may have been areas set aside for pit tombs, but beyond the superficial cuttings, they were never completed (Dash 2009, 4–12).

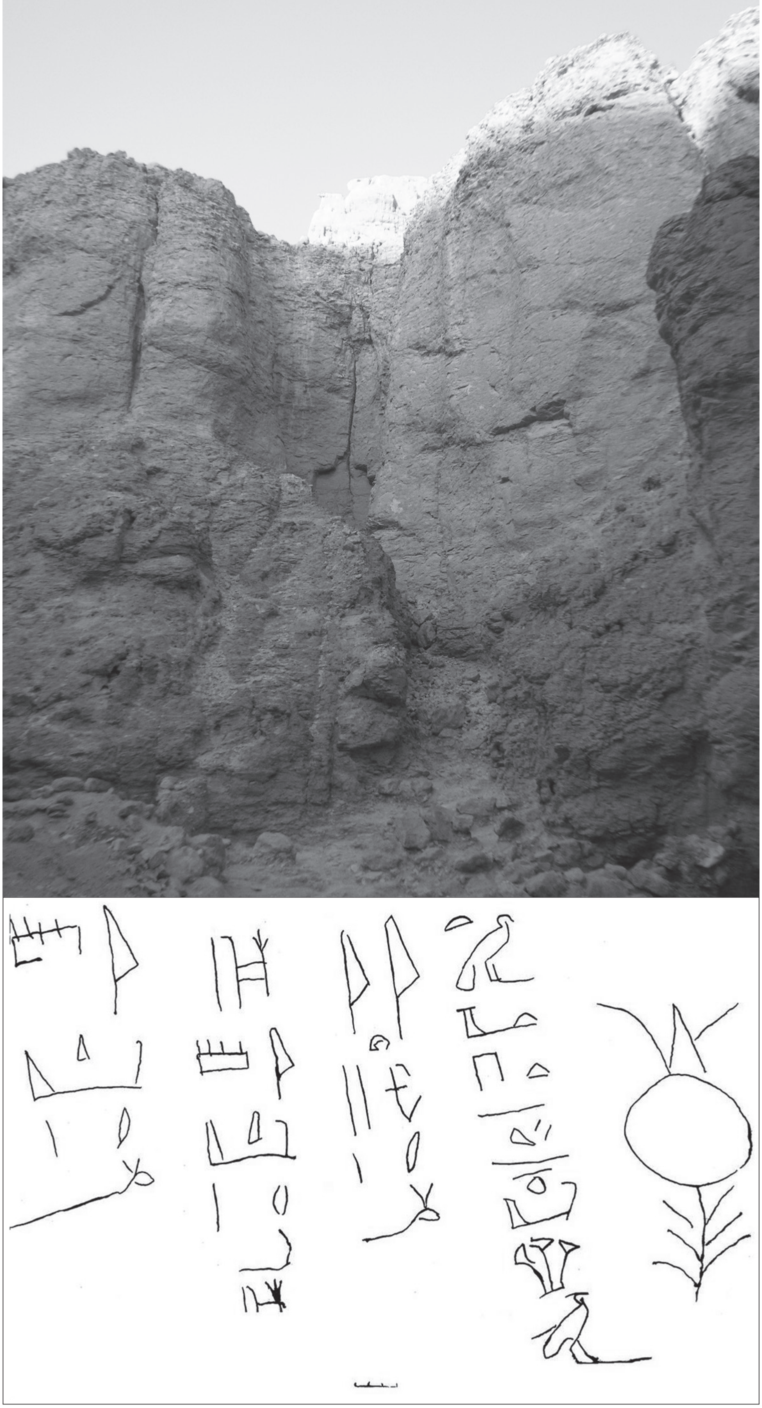

Figure 1.9. The Hay inscription. Photo by the Glen Dash Foundation. Illustration courtesy the Ministry of State for Antiquities, and used with permission.

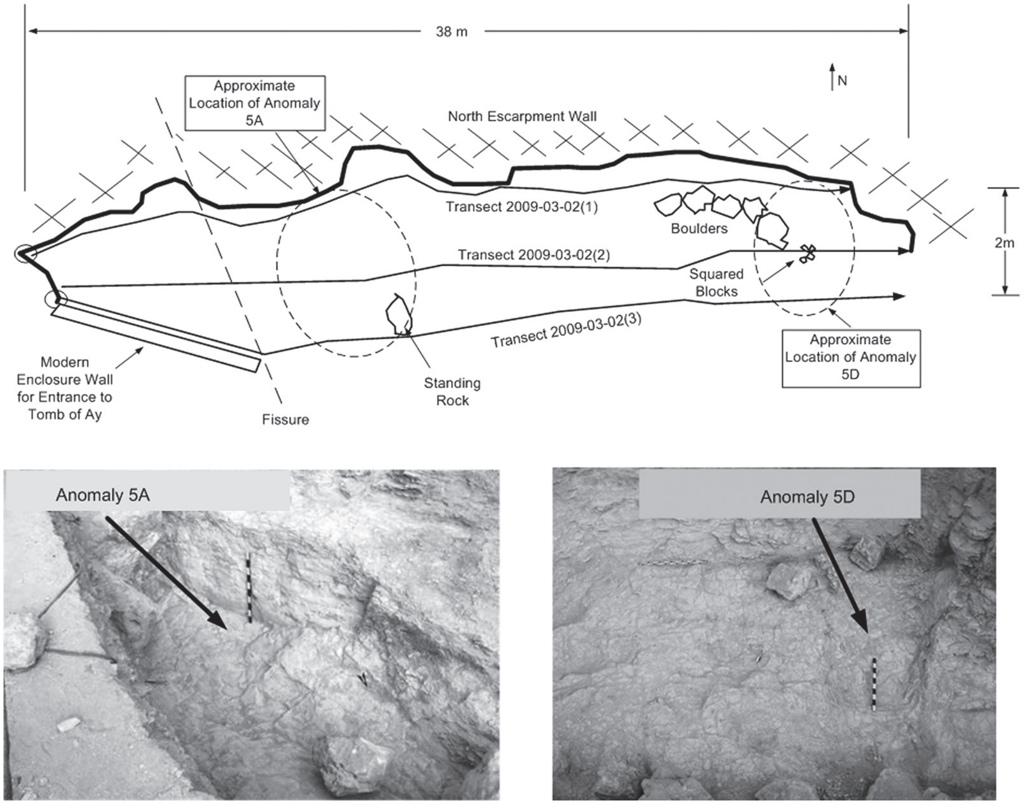
38 m
N
Approximate Location of Anomaly 5A
North Escarpment Wall
Transect 2009-03-02(1)
Boulders
Transect 2009-03-02(2)
Squared Blocks
Transect 2009-03-02(3)
2m
Approximate Location of Anomaly 5D
Modern Enclosure Wall for Entrance to Tomb of Ay
Fissure
Standing Rock
Anomaly 5A
Anomaly 5D

Figure 1.10. Radar surveys near the Tomb of Ay. Drawing by the Glen Dash Foundation. Photographs used with the permission of the Ministry of State for Antiquities.

Interpretations of the finds

During whose reign were the foundation deposits placed? The evidence seems to suggest the reign of Amenhotep IV/Akhenaten. Nothing encountered is inconsistent with the hypothesis proposed by Schaden and Wilkinson that WV24 and WV25 were begun by Amenhotep IV/ Akhenaten before he moved the royal house to Amarna. Indeed, the relative positions of WV23, WV24, WV25, and the foundation deposits suggest that they may all have been conceived of as part of one complex. However, none of these tombs were completed until after the Amarna period, when the royal house returned to Thebes, finishing what eventually became the tomb of Ay. To supply the infrastructure needed for that undertaking, the Egyptians may have levelled the area over and around the forgotten foundation deposits, and built workmen's huts on top.

In an alternative scenario, it is possible that the foundation deposits could have been set in place during the reign of Tutankhamen, Ay, or another king of the late 18th dynasty. Under this scenario, the workmen's huts would not have been built in the 18th dynasty at all. They would have been built later, perhaps by the deputy Hay in the 20th dynasty.

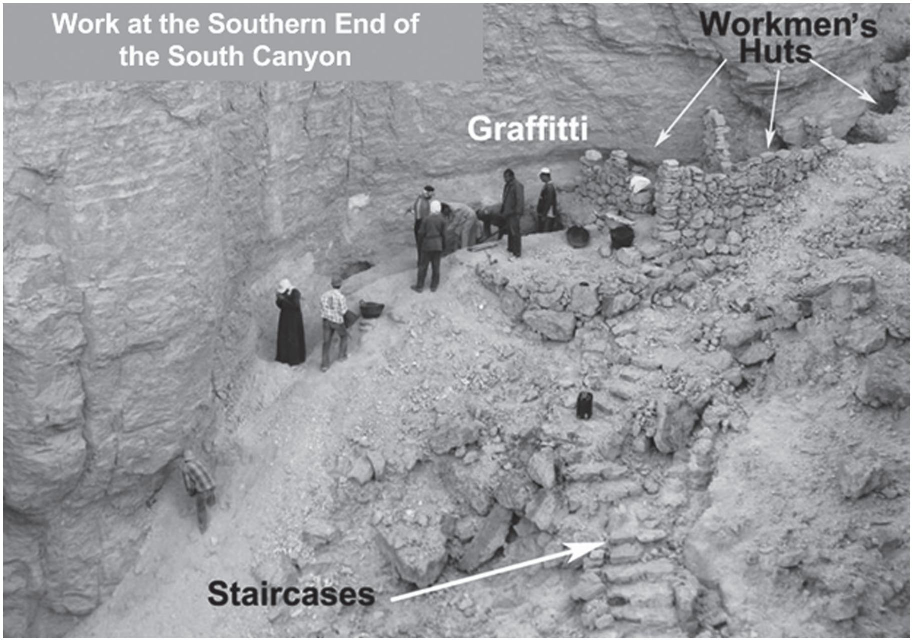

Figure 1.11. Stairway leading to previously unknown workmen's huts at the southern end of the south canyon. Photograph used with the permission of the Ministry of State for Antiquities.

Other work in the westernmost end of the western valley

The archaeological team also uncovered, excavated, and recorded workmen's huts at the southern end of the southern canyon (Fig. 1.11). Here, the team found a rock-cut stairway leading up to the huts from the floor of the canyon.

Problems encountered with the Theban Mapping Project maps

Some problems were encountered with the TMP maps of the area. The topographic overlays appear to be somewhat misplaced. Since it appears that the workmen's huts were mapped relative to the contours, they appear to be misplaced on the TMP maps as well.

Conclusions

We can reasonably date the deposits to the 18th dynasty. The deposits lie on a line that runs 'local east' from the axis of the tomb of Ay, suggesting that this tomb and the deposits are related. Almost exactly in the middle is WV25, perhaps originated by Amenhotep IV/Akhenaten, further suggesting that all three may be related. Amenhotep IV/Akhenaten may have originally intended to make this portion of the western valley his personal royal necropolis, before moving to Amarna. Alternatively, a later king of the 18th dynasty, perhaps Ay, may have placed the foundation deposits here after the royal house returned to Thebes. Ay may have marked out, but not completed, pit tombs near his own.

Despite the team's diligent efforts, no tomb associated with the foundation deposits could be found. This may be because none was built. It is possible, however, that a tomb is still there, perhaps lying under the roadway, or cleverly hidden high up in the escarpments.

Acknowledgments

The authors would like to thank John Nolan for his help in researching the Hay inscription and Sarah Doherty for her help in analysing the pottery in the foundation deposits.

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2

Egyptian-Levantine Connections: New evidence for Early Bronze Age Fortifications and Some Preliminary Results of an Initial Season of Investigations at Tel Erani, Israel

Krzysztof M. Ciałowicz, Yuval Yekutieli, Joanna Dębowska-Ludwin, Karolina Rosińska-Balik, Omer Shalev and Michał Wasilewski

Introduction

This paper briefly outlines the results of the Israeli-Polish excavations at Tel Erani, Areas D3 and N3 (Fig. 2.1) in 2013, and its major preliminary discoveries. Located on the outskirts of Qiryat Gat, Israel, this large tell is the site of one of the most important Early Bronze Age occupations in the southern Levant. Known for having yielded significant evidence of an Early Bronze Age I occupation (*c*. 3700–2950 BC; Yekutieli 2007, 66) with many Egyptian remains from the late predynastic period (*c*. 3150–2950 BCE, Brandl 1989; Yeivin 1960a), it has also yielded remains of Early Bronze II (*c*. 2950–2800 BCE) and Early Bronze III settlements (*c*. 2800–2500 BC). This multi-season project, which plans to review and synchronise newly unearthed deposits with those of earlier excavations, hopes to achieve a holistic overview of the site and the history of its earlier occupations, effectively dating them and determining the significance of the material culture they yield.

Excavation has yielded important information about a fortification first discovered in the last century in Area N (Brandl 1989; Yeivin 1960a; Yeivin and Kempinski 1993). In addition, results of a geomorphological survey of the site's vicinity offer insights into available resources for its inhabitants, while preliminary analyses of a portion of the pottery assemblage and of a stone mace head offer early insights into what future work at the site may produce.

The site and history of research

Tel Erani straddles two branches of Nahal Lachish, *c*. 2 km west of where that seasonal watercourse emerges from the southern Shephela into the loessial plain of the northern Negev. The site covers an area of *c*. 24 ha, with a small, somewhat steeply inclined acropolis (16,180 m^2, Map Ref. Google Earth coordinates: 31^{o}36'46.52"N/34^{o}47'11.01") at its north-eastern edge, and two major terraces that make up a lower mound. The upper terrace, *c*. 20 m below the acropolis, has an area of 161,840 m^2. The lower terrace, beginning at *c*. 10 m below, of uncertain dimensions, slopes gently to the south where it is bordered by Highway 35 that sits atop massive modern fills that obscure the original topography, where the mound was bordered by the stream bed. Soundings by E. Braun and E. C. M. van den Brink indicate that precincts of the site lie south of the visible edge of the tell, perhaps as much as 4 m below the modern roadbed (Fig. 2.1).

The history of archaeological inquiries and exploration of Tel Erani began in the late nineteenth century (Conder and Kitchener 1883, 259) and since its discovery it has been known by various Arabic names. In the 1920s, W. F. Albright (1921–1922, 11) suggested the site should be identified as the biblical 'Gath of the Philistines' (Tel Gat). After initial excavations indicated that that identification was incorrect, the Hebrew name of Tel Erani and variant spellings (*e.g.* Tel ʿErani, Tel Erany) was officially adopted and is today used by most scholars (*e.g.* Anđelković 1995; Ben-Tor 1991; Braun 2009; Gophna and Portugali 1988; Levy *et al.* 1995).

The first archaeological work carried out at Tel Erani and known as the 'Tel Gath Excavations Project' was a large-scale excavation under the direction of S. Yeivin, then director of the Israel

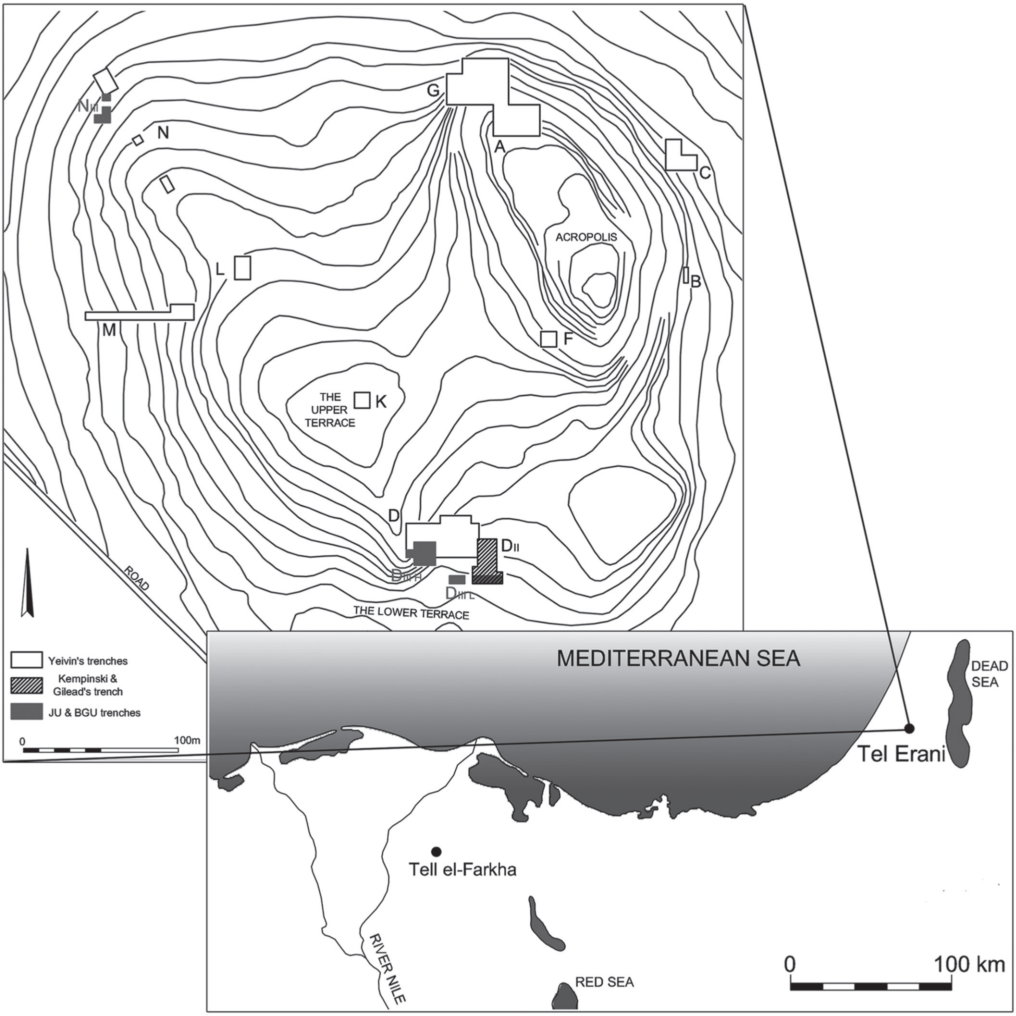

G
A
C
N
NIII
L
M
ACROPOLIS
B
F
THE UPPER TERRACE
K
D
DII
DIII H
DIII L
THE LOWER TERRACE
ROAD
Yeivin's trenches
Kempinski & Gilead's trench
JU & BGU trenches
0
100m
MEDITERRANEAN SEA
DEAD SEA
Tel Erani
Tell el-Farkha
RIVER NILE
RED SEA
0
100 km

Figure 2.1. Tel Erani – general localization and map of the site (drawing by K. Rosińska-Balik).

Department of Antiquities and Museums, during the years 1956–1961. Results (Yeivin 1960a; 1960b; 1961; 1962; 1963; 1967; 1968; 1975) were sufficient to indicate Albright's identification was incorrect.

Yeivin opened a series of trenches in the most representative parts of the site. Area N, where a massive fortification wall was discovered, is the focus of this paper. Yeivin dated the wall to Early Bronze Age I (EB I), but that dating was rejected by B. Brandl (1989, 383) who, on the basis of Yeivin's primary documentation of the excavation, dated the wall to Early Bronze Age III (EB III). In addition, in Area D the Tel Gath Expedition recovered considerable Egyptian and Egyptianised material, including the first *serekh* (of Narmer) discovered in the southern Levant, which Yeivin (1960a, 195–196) also dated to EB I. Those discoveries were to greatly impact the study of the foreign relations of that period and the question of an Egyptian colony in the southern Levant in the era of Narmer/late Dynasty 0.

Later excavations adjacent to Yeivin's Area D, conducted by A. Kempinski and I. Gilead (1991) for Tel Aviv University, focused on what they believed to be a period of transition from a pre-urban to an urban EB I occupation. In 1993 and 1994, E. Braun and E. C. M. van den Brink (1997) conducted salvage excavations on the southern fringes of the lower terrace.

The new joint expedition to Tel Erani

After a hiatus in archaeological exploration, a joint Israeli-Polish mission to Tel Erani was initiated in 2013 by Ben-Gurion University of the Negev and Jagiellonian University in Krakow. Polish Participation is part of a larger project on 'Trade Routes of the Near East (TRoNE)', and was financed from the National Science Centre of Poland granted on the basis of decision no. DEC-2012/07/B/HS3/03381, which examines Levantine-Egyptian trade connections in the fourth millennium BC (Dębowska-Ludwin *et al.* 2012). The first season's excavations at Tel Erani, directed by Yuval Yekutieli, Krzysztof M. Ciałowicz, and Joanna Dębowska-Ludwin, concentrated on Areas D3 and N3, with '3' indicating this to be the third long-term expedition to the site.

Area N and the fortification

Work in Area N3, in the north-western precinct of the mound, began by locating the fortification found and identified by Yeivin (1960a, 1962, 1967) as a 'city wall', in order to obtain its precise measurements and determine its date. This had been alternately claimed to be EB I by its excavator and Kempinski and Gilead (1991), and EB III by Brandl (1989). Yeivin proposed dating of the wall, which he associated with Egyptian activity, was based mainly on an assumption of a very short-lived Egyptian presence at the site. Brandl (1989, 368–376) dissociated the fortification from the Egyptian equation and dated it later, further reinterpreting material from Yeivin's excavation as evidence for greatly prolonged Egyptian contacts. As there was no direct evidence for an Egyptian association with the fortification and the chronological range of the Egyptian pottery from Tel Erani was poorly understood when Brandl did his study, it was hoped that new information might determine the dating of what was then known to be a massive mud-brick construction.

Our excavation included three 5 m × 5 m squares adjacent to the old trenches, planned so as to unearth both the inner and outer façades of the fortification (Fig. 2.2). Nearly the entire area of one square, E7, proved to have been filled by the fortification wall. This is clear in the

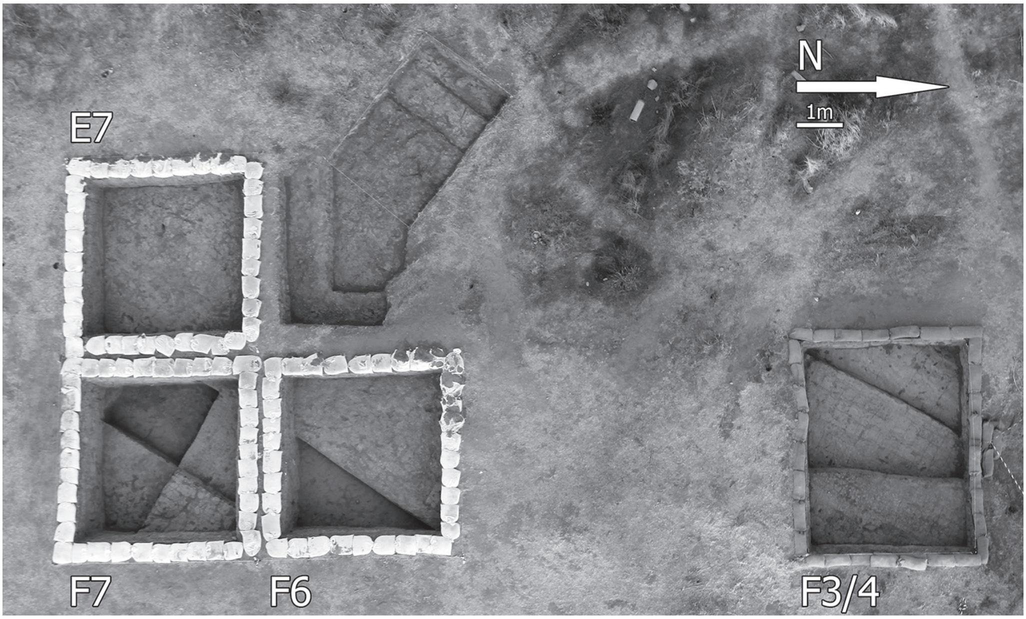


Figure 2.2. Plan of squares at Area N3 in 2013 (balloon photography).

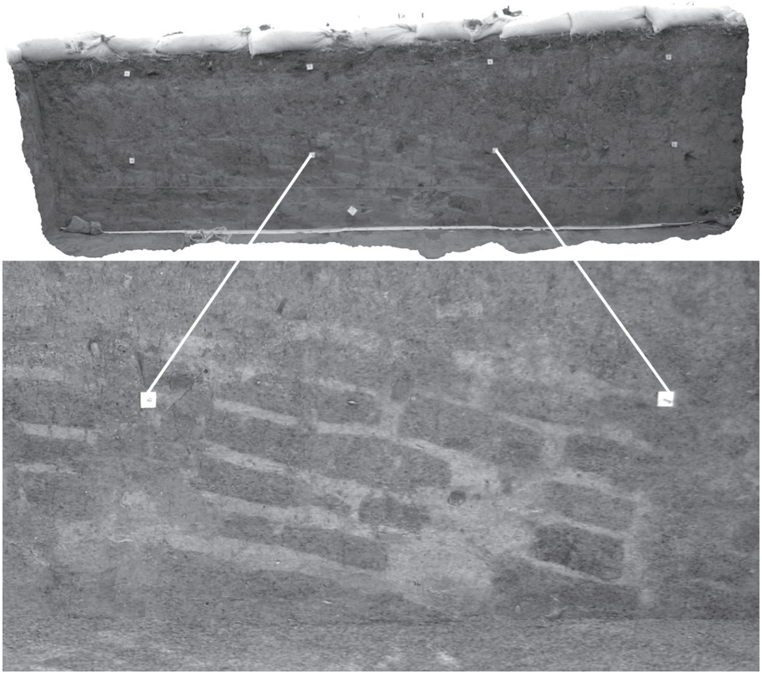


Figure 2.3. Profile of the fortification wall at square E7 – eastern bulk (photo by K. Rosińska-Balik)

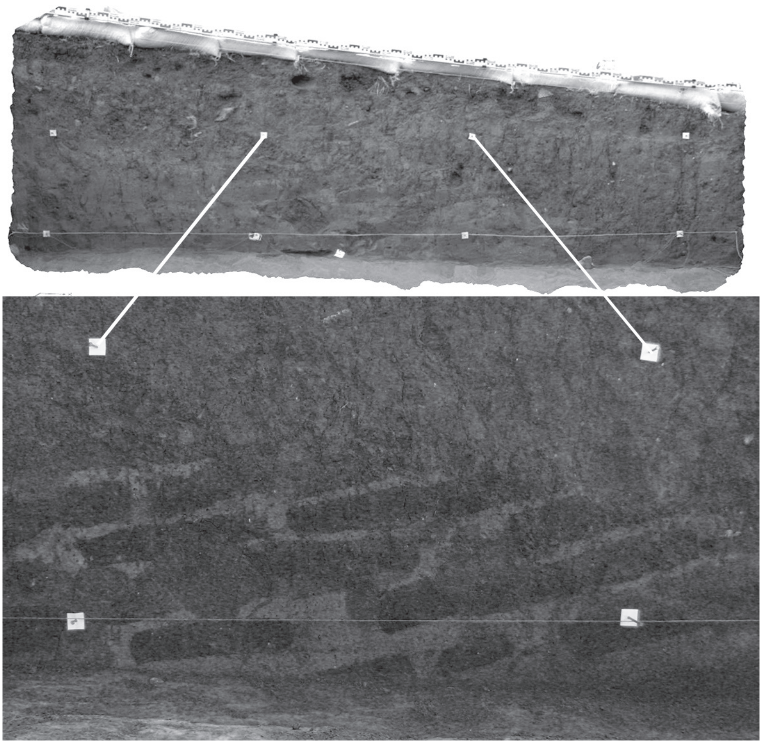


Figure 2.4. Profile of the fortification wall at square E7 – southern bulk (photo by K. Rosińska-Balik)

photogrammetric pictures of sections (Figs 2.3, 2.4), where lines of bricks and light grey mortar encountered in the excavation are documented. All the rows of bricks are skewed towards the inner façade. That distortion is apparently associated with a juncture of two structures, since at that point a smaller wall (W528) perpendicular to the main structure was unearthed. That smaller wall is more clearly visible in Square F7 (Fig. 2.5). By the end of the season, the inner façade of the fortification wall was found in a very clear line in Square F6. Its line may also be seen in Square F7, where it deviates slightly. Such deviation is understandable, as the construction is very ancient and made of unbaked mud-bricks that may have been deformed due to exigencies of climate and pressure. Unfortunately, the area immediately adjacent to the fortification wall, Square F6, was devoid of architectural remains, but it did yield some scant finds. The most interesting was a broken stone mace head (of which further discussion can be found below).

Square F7 was especially informative as it yielded information on additional mud-brick structures in an area beyond the inner façade of the fortification. Among them were two parallel walls, which, together with the fortification, delineate a small room. What appears to be a mud-brick pavement was discovered outside one of them. The pottery from this small room, which notably had at least two floors, dates to EB Ib1.

In addition, the team also cleared an old trench immediately west of the other squares in which a number of modern items, such as bullets and cartridges from the mid-twentieth century were found. It appears that a number of shallow dugouts in vicinity of these squares include

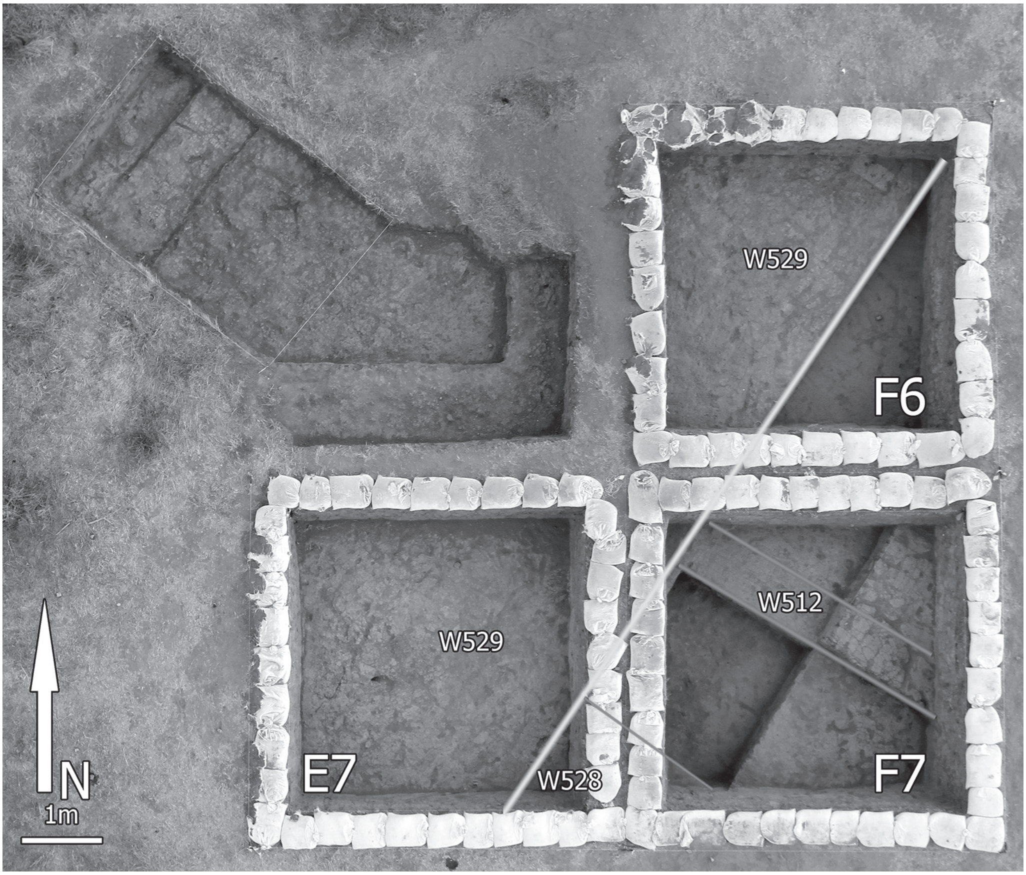


Figure 2.5. The city-wall and adjacent walls W512 and 528 (balloon photography)

both remains of Yeivin's excavation and trenches dug during the battle of the Faluja Pocket in the 1948 war. Accordingly, new Square F3/4 was opened in an area not disturbed by these modern trenches, which also revealed a mass of mud-bricks – an extension of the line of the fortification. Its outer façade was uncovered very close to where Yeivin's (1960a) team made its initial discovery.

The bricks seem to be of a standard size measuring 25 × 15 × 5 cm, arranged in a clearly observable pattern of parallel walls (Fig. 2.6), set face to face and bonded with mud mortar. This last technique is believed to have been intended for stabilising what appears to be a truly monumental construction. The width of the fortification wall has been determined as *c.* 8 m (Fig. 2.7).

Of particular importance is the unearthing of a room connected with the wall that gave a *terminus ante quem* for this monumental structure. This observation is based on the analysis of pottery found in Square F7, dating mainly to EB Ib1. This is of particular significance, as it contradicts Brandl's (1989, 383) dating of the fortification to EB III, while supporting the claims of Kempinski and Gilead (1991). Radiocarbon dates seem to confirm the validity of the EB I attribution.

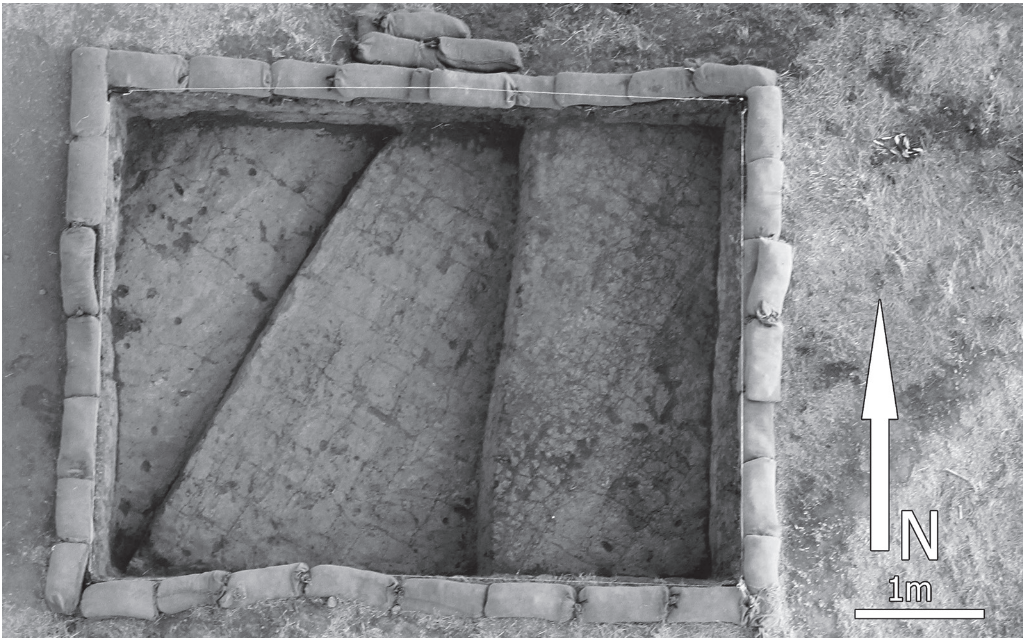


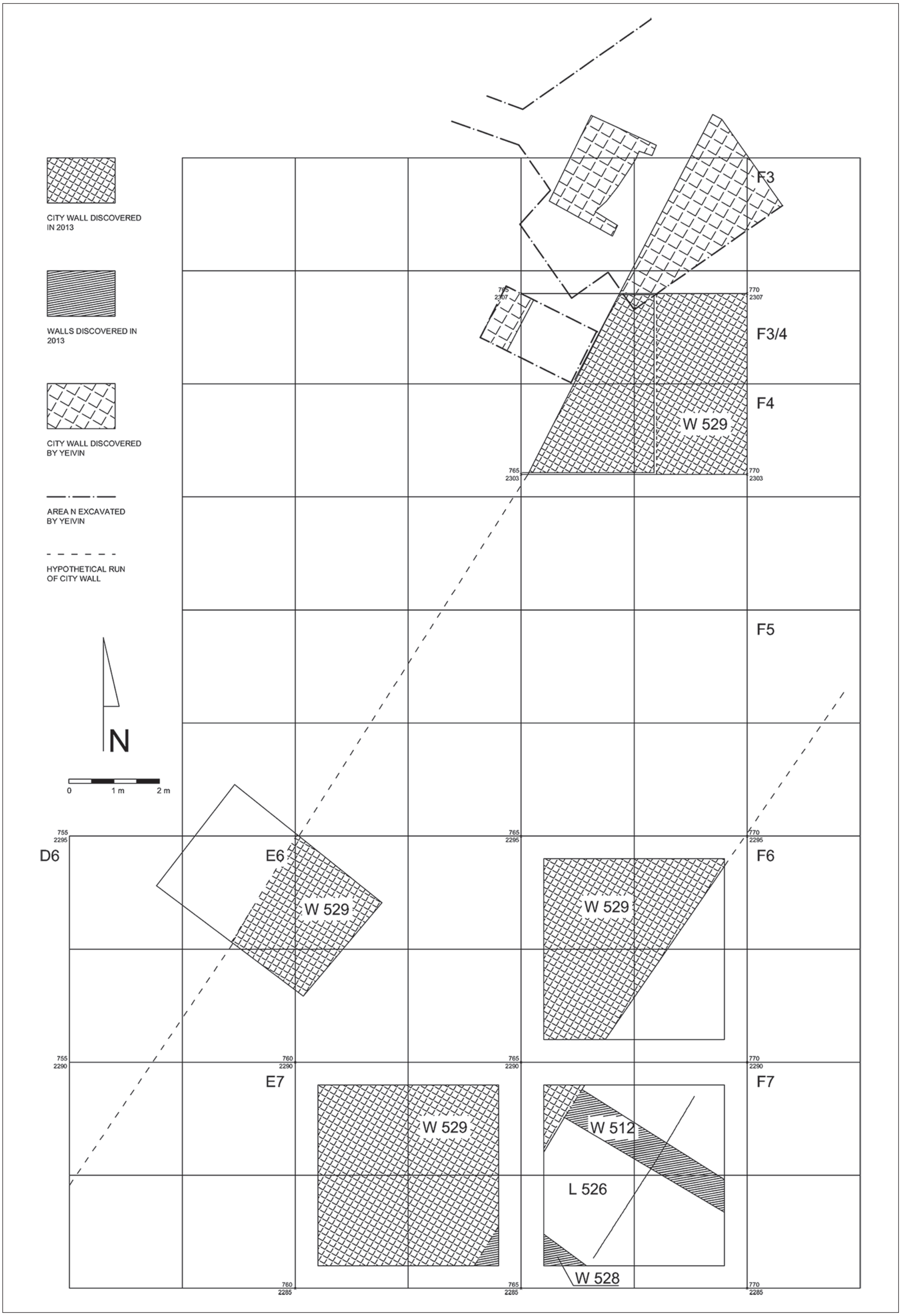
Figure 2.6. Brick arrangement at the fortification wall at square F3/4 (balloon photography)

A *note on the mud-brick architecture*

Members of the Polish team noted significant similarities between brick building practices at Tel Erani and in Egypt, especially at Tell el-Farkha. Both sites have shown evidence of nearly contemporary monumental mud-brick architecture. At Tell el-Farkha, it is found in the Naqadan residence (Ciałowicz 2012, 163–171) and in Mastaba No. 10 (Ciałowicz and Dębowska-Ludwin 2013, 154–158), while at Tel Erani it is seen in the fortification wall. Although these locations are very distant from each other, the structures bear surprisingly common features: bricks of similar dimensions and analogous combinations of various types of brick material and walls are built face to face in order to create solid durable constructions. However, there are also differences. The fortifications of Tel Erani were obviously intended for a different function and are significantly larger than the Tell el-Farkha buildings, which had public and funerary functions.

Pottery analyses: preliminary results

The preliminary study of pottery from Area N3 determined the dating of all diagnostic potsherds. When possible, identifications were assigned a precise sub-period, such as EB Ib1. In other instances, only more relative dating to a sub-period, such as EB Ib, or only a generalized era, such as EB, was possible. It was also possible to determine a minimum number of vessels (MNV) in the assemblage and to ascertain functional categories, such as large and small storage vessels, cooking pots, and open serving vessels. The MNV is a simplified method of pottery counting: in a group of *e.g.* thirty sherds representing the same ware, of which twenty belong to


CITY WALL DISCOVERED IN 2013
WALLS DISCOVERED IN 2013
CITY WALL DISCOVERED BY YEIVIN
AREA N EXCAVATED BY YEIVIN
HYPOTHETICAL RUN OF CITY WALL
N
0
1 m
2 m
F3
F3/4
F4
F5
D6
E6
F6
E7
F7
W 529
W 529
W 529
W 529
W 512
L 526
W 528
765 2307
770 2307
765 2303
770 2303
755 2295
765 2295
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755 2290
760 2290
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Figure 2.7. Plan of architectural features unearthed in 2013 and their juxtaposition with Yeivin's results from 1960–1961 (drawing by K. Rosińska-Balik, Yeivin's trench after Yeivin 1960a, fig. 4).

a vessel's body, five to the rim, four to the bottom, and one to a handle, they all are counted as a single vessel. If in the group one of the rim fragments is differently shaped, the total number of vessels reaches two. If one of the bottoms bears decoration, the number grows to three, and so on. Every sherd that does not fit to the other ones makes a new vessel number.

Two adjacent floors (Locus 525 and Locus 526) in Square F7, where the inner face of the fortification wall was discovered, are particularly important for its dating. The overwhelming majority of diagnostic pottery found there could be definitively dated to EB Ib, while the most diagnostic pieces indicate an EB Ib1 date (Fig. 2.8). This last sub-period, an early phase of EB Ib, was first defined in Kempinski and Gilead's (1991) excavation at Tel Erani, where it was ascribed to Layer C and associated with several types of pottery (Braun 2012, 11–13, fig 4). Braun and van den Brink (1998, 77–79) co-opted the term, labelling EB Ib1 'the Erani C horizon'. Yekutieli's (2006) treatment of the pottery from Kempinski and Gilead's excavations divided the 'Erani C' ceramic assemblage into two categories. One, the 'South-western Canaanite Group', includes (a) flat based pithoi with external white-wash, (b) storage-jars with red-orange vertical stripes on top of white-wash, (c) diagonal incisions on necks and sometimes cut (rather than impressed) indentations on ledge handles, (d) various plastic decorations on medium sized vessels, and (e) holemouth-jars with folded or cut rims to which are attached flat bands of clay depressed at short regular intervals (*i.e.* imitating rope). A second category, labelled the 'Erani Group', includes fabrics of brown-yellowish clay, often decorated with red slips. It includes medium-sized storage jars with loop handles, bowls with folded rims and knobs, and juglets of which some had wheels.

As Yekutieli (2006, 238–239, fig. 1) noted, the Erani C pottery has a clear pattern of regional distribution more or less centred at Tel Erani. Closer to the mound, one finds sites where most

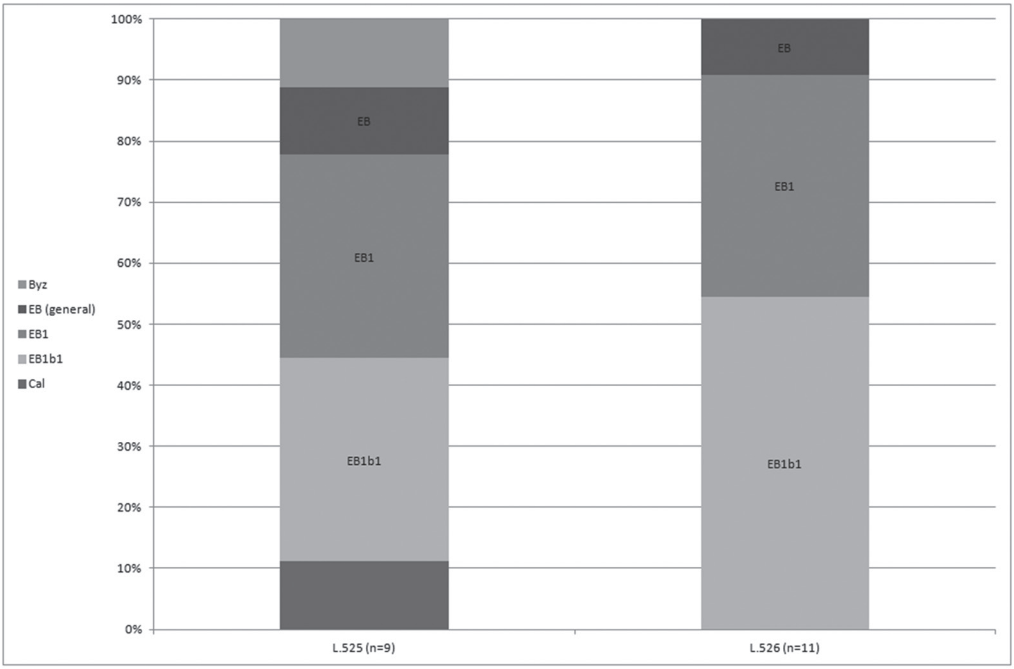

Figure 2.8. Percentage of vessels by periods.

of the contemporary ceramic assemblages are similar to that of Layer C at Tel Erani and have significant quantities of its hallmark wares. They are known at Ashqelon-Afridar (Gophna 2002), Horvat Ptora (Milevski and Baumgarten 2008), Amatziya (Milevski *et al*. 2012), Nahal Yarmuth (Eisenberg and Sekler 2000; Shalev *forthcoming*), and Hartuv (Mazar *et al*. 1996). Erani C types are also common in a broader geographic circle, but the assemblages include other types as well. What appear to be lesser, albeit significant, quantities of these distinctive types are known from Azor (Amiran 1985), Jericho (Kenyon and Holland 1983, Fig. 37, *passim*), Tel Halif Terrace (Levy *et al*. 1997, 7–8), and North Sinai (Oren 1989; Yekutieli 1998). It is particularly noteworthy that a considerable number of Erani C ceramic vessels (Braun 2012/13) were found in Egypt (*e.g.* Czarnowicz 2014; Hartung 1994; Yekutieli 2007, 72–73).

The diagnostic sherds adjacent to the fortification wall in Area N3 comprised mainly EB Ib1 types and included vessels from both the 'Erani Group' and the 'South-western Canaanite Group' (Fig. 2.9). An example of the former type is a bowl with a folded rim and a red slip (Fig. 2.9:1). Examples of the latter are a dark-brown hole-mouth with folded rim and applied rope-like decoration (Fig. 2.9:2–3), a brown hole-mouth with cut rim (Fig. 2.9:4), a base of a white washed pithos (Fig. 2.9:5), and storage jars with vertical red stripes painted on white-washed surfaces.

Geoarchaeological survey: preliminary results

The aims of this preliminary work were to place the site into a general geological context as well as describe and propose possible sources of raw materials found nearby that may have been used in production at the site. Most of the site's surface is covered with a layer of rather thin, weathered desert loess sediments and soils, clearly derived from their 'maternal' limestone

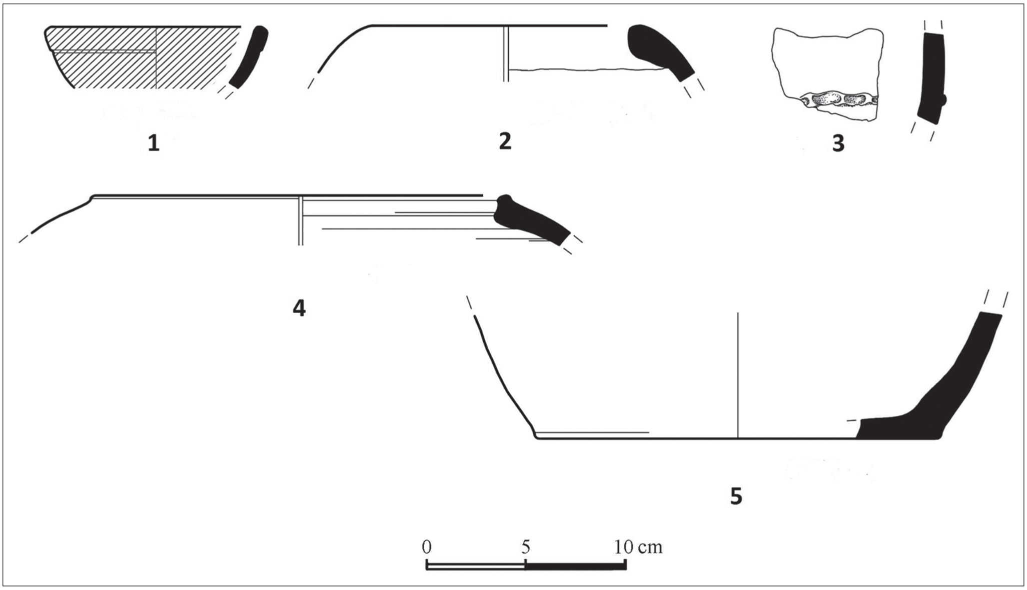

Figure 2.9. Selection of sherds from Area N3 (drawing by H. Sokolovsky).

deposits. To the west of the site there is a low-lying depression or seasonal watercourse (*nahal* in Hebrew, *wady* in Arabic), presently the location of a railroad and agricultural fields. The hill on which the mound is located, as well as its vicinity, is covered with thick anthropogenic and colluvial sediments that are more than 4 m thick at the base of the mound on its southern side. Information derived from a geological map (Sneh *et al.* 1998), personal communications and a limited geological survey in the vicinity of the site extending to an approximately 10 km radius (*i.e.* the study area), made it possible to indicate something of the sources of raw materials (Rosen 1986).

Sources for chipped stone artefacts

The chipped stone industry is based on chert, found in the study area in sedimentary chalk deposits (E_a,= Adulam Formation of Lower Eocene age), some of which may have come from a chalky hill located about 2.5 km southeast at the edge of the Shepela. Cherts from those deposits vary in colours and hues from light to dark and from red to grey. Ground stone implements of dolomite-like conglomerates may have derived from the vicinity of the site from as near as 2.5 km to the east and other deposits of the Ahuzam Formation of Pliocene age further east in the Shephela, but could also have come from as far away as the Mediterranean coast.

Objects of hard sandstone found in the excavation may have come from sandstone sources to the north and northwest of the site, where they are part of the Pliocene Pleshet Formation, but they too may have come from a considerable distance, as no visible outcrops of these rocks were found in the study area. Such deposits could today, however, be covered with loose sediments and thus were not encountered in our survey. It is also worthy of note that although a majority of ground stone implements found at the site proved to be of basalt, there are no outcrops of this stone in the study area. Those objects may have come from the Negev, where sources for it are known, but not plentiful. More likely they derive from sources farther afield to the north and east, where major deposits of this volcanic rock are known (Orni and Efrat 1980, 6, 14, 26, 57, *passim*; Sneh *et al.* 1998).

With the exception of basalt, it appears that the majority of non-ceramic artefacts encountered in the excavation derive from raw materials found in the vicinity of the site. Planned future petrographic examination based on optical microscopy and other methods will hopefully allow us to make more precise conclusions.

The mace head

Although only one half of this limestone object was preserved, it was possible to determine its original maximum diameter as between 55 and 59 mm, and that it was pierced vertically by a 13 mm diameter shaft-hole (Figs 2.10, 2.11). Some traces inside the shaft suggest it was drilled bi-directionally. Its length is 88 mm.

This item is a typical piriform mace head of a kind well rooted in the material culture of the southern Levant (Rosenberg 2010), but also characteristic of Predynastic Egypt (*i.e.* Type III in Ciałowicz (1987, 22–26), dated to Naqada II). This shared tradition underlines a very significant fact that this type of object took the same form in two cultural contexts, which can be treated as proof of connections between Egypt and the Levant.

In Egypt, this type has a history of use in both functional and ceremonial roles. Numerous examples from both south Levantine and Egyptian cultural contexts may be cited as parallels. In morphology and material, the closest *comparanda* include a Levantine mace head from Neve Yam dated to the Pottery Neolithic period (Rosenberg 2010, 212, fig. 10) and an Egyptian mace head from Fayum Kom W dated to the Predynastic Period (UC2784, Petrie Museum of Egyptian Archaeology, London).

The context of the mace head does not clarify its source. It was retrieved at an upper elevation containing debris from the fortification wall together with a few sherds, apparently of Egyptian origin or of Egyptianised types. Although the pottery remains to be examined in detail, it is clear that the identified pieces were at least imitations of Egyptian types. It is an appealing idea that the occurrence of a weapon and Egyptising pottery in the same destruction layer could favour their interpretation as the result of a military incident. However, it should be noted that the wall may well have been decaying for years due to natural causes and that the association of these objects to its debris is coincidental. As for the mace head, it is an object used as a weapon and also indicative of status. How this fragment of uncertain cultural origin (Rowan and Levy 2011, 185) came to the particular place where it was recovered currently remains an intriguing conundrum.

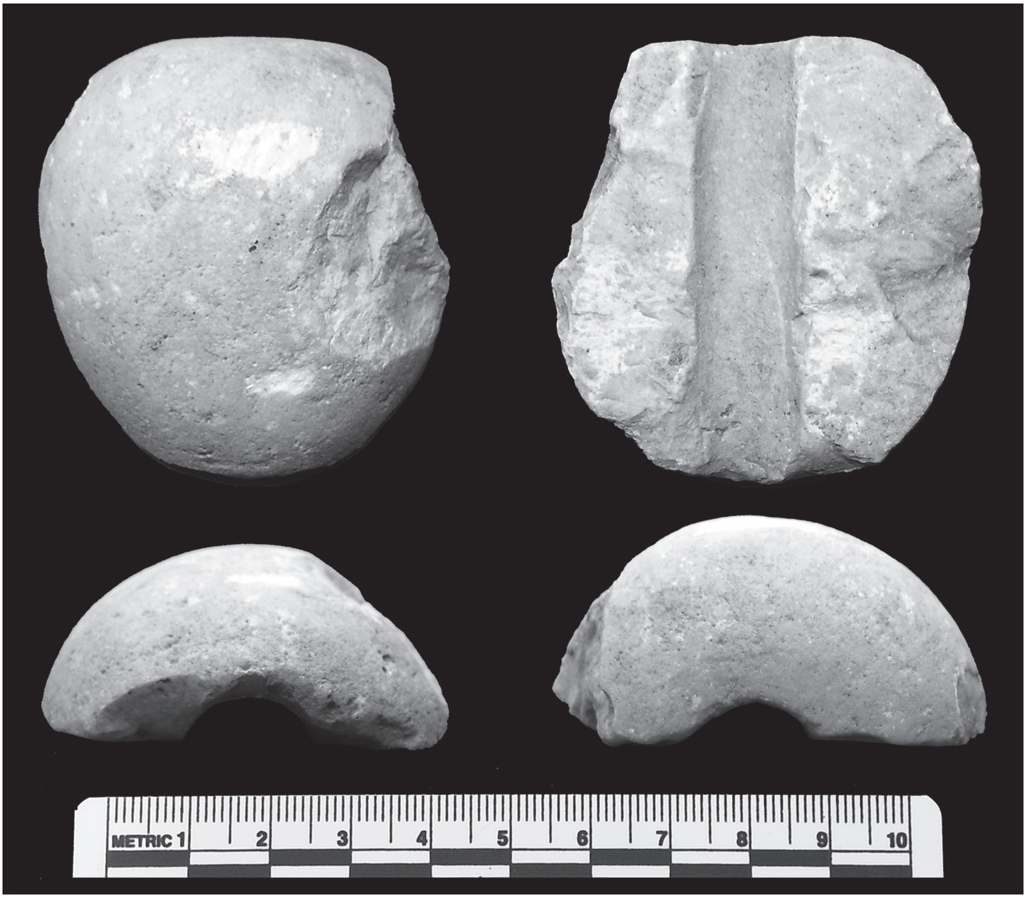

Figure 2.10. The mace head from Tel Erani (photo by M. Czarnowicz).

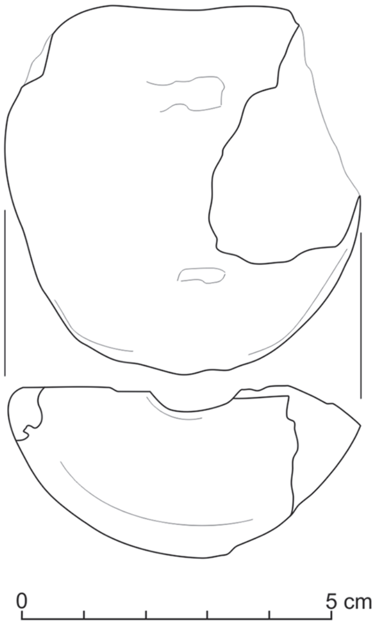

Figure 2.11. The mace head from Tel Erani (drawing by J. Dębowska-Ludwin).

The fortification: a city wall

Judging from the massive dimensions of the fortifications uncovered, its association with the lower terrace at its north-western extremity, and the size and contours of the tell, it seems likely to have been part of a system that circumvallated the entire lower mound, encompassing a very large area. Judging from the monumentality of the known construction, extrapolated to include the entire site, it is quite clear it would have required significant planning, sophisticated logistics, and very significant *corveés* of labour who had to be housed and fed. Thus, we may extrapolate that this was no mere fortress, but likely an urban installation with a complex hierarchical organization capable of creating such a monumental construction. In favour of this is an unpublished magnetometry survey of a large precinct of the southwest upper terrace made by S. Itkiss of the Israel Antiquities Authority, which indicated the likelihood it contained many mud-brick constructions. If that should prove to be true of much more of the lower mound, then one may truly call the fortification a 'city wall'.

Conclusions

The most important discoveries of the initial season in Area N3 are the unearthing and physical definition of the city wall, which revealed that it was 8 m wide, and the confirmation of Yeivin's dating of the fortification wall to a period prior to the reign of Narmer (Yeivin 1960a, 203), most probably to the EB Ib1 phase. This information has profound implications for understanding the late fourth millennium southern Levant, its socio-economic development, and the emergence of its urbanisation.

The presence of the 'Erani C' EB Ib1 pottery at the site, as well as in other sites in Egypt, is an important clue that will help to shed light on the dynamics of south Levantine-Egyptian connections during the Early Bronze Age, as they enable closer correlations between the archaeological records of these two regions. Such associations may also extend to the traditions of mud-brick construction.

Acknowledgements

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field administrator, and Shifra Jean provided administrative 'backup' at Ben-Gurion University. Elisabetta Boaretto and Johanna Regev (Weizmann Institute) participated in the field in extracting radiocarbon dating samples for their analyses. Michał Wasilewski (Jagiellonian University) began a study of the geomorphology of the site and Jakub Skłucki (Jagiellonian University) initiated a continuing study of the chipped stone industry. Irena Gutman (Ben Gurion University) is in charge of the pottery restoration, while Hellena Sokolovsky and Patrice Kaminski are to produce drawings of the finds. Field workers included archaeology students from both Ben-Gurion and Jagiellonian Universities. Additional participants were Samuel Atkins (England), Ivan Cots and Ramon Ferré (Spain), Robert Finaly (Israel), and volunteers from the Israel Parks and Nature Reserves Authority. The Qiryat Gat Municipality very generously provided logistical support throughout the dig and officials of the Israel Antiquities Authority offered their excellent advice and services.

The commitment, hard work, and expertise of all the people involved in the excavations and processing of finds opened a new research perspective for the site, which finally reveals more and more of its secrets.

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3

Conservation Work in the Tomb of Amenophis III, 2011–2012 Season

Akiko Nishisaka, Kazumitsu Takahashi and Sakuji Yoshimura

Introduction

Since 1989, a team from the Institute of Egyptology at Waseda University, Tokyo, headed by Sakuji Yoshimura, has worked in the royal tomb of Amenophis III in the western Valley of the Kings. With the aims of completing clearance and reporting the historical significance of the tomb, 15 seasons have been carried out and have included mapping, excavation, documentation, and epigraphic survey (Kondo 1992; Kondo 1995; Yoshimura and Kondo 1995; Yoshimura *et al.* 2008; Yoshimura *et al.* 2011).

The wall paintings are among the most exquisite of those surviving in the royal tombs of the 18th dynasty. However, the paintings were in a precarious condition from natural decay and biological attack caused by the urine and excrement of bats. The surface of the painted plaster has detached from the wall, causing the painted plaster to fall. Cracks on the walls and pillars have caused severe damage and some pillars are close to failure. The urgency of conservation measures in the tomb as well as the need for multi-disciplinary work due to the complexity of conditions is evident.

The Institute of Egyptology at Waseda University has begun comprehensive conservation work of the wall paintings in the royal tomb of Amenophis III under the auspices of UNESCO/Japan Trust Fund and in cooperation with the Supreme Council of the Antiquities in Egypt. Thus far, two short-term seasons and two long-term phases have been conducted by an international team consisting of Japanese, Egyptian, and Italian conservators directed by Italian chief conservator Giorgio Capriotti (Yoshimura and Kondo (eds) 2004; Yoshimura *et al.* 2005; Yoshimura and Nishisaka 2008). From October 2011 to May 2012, the third phase of the conservation project resumed with the aim of continuing conservation of the wall paintings.

The main goals of the 2011–2012 season included (1) the conservation of the paintings on the walls and ceilings, (2) the conservation of the cracks in the pillar, and (3) the conservation of the sarcophagus lid. During the course of our work, close observations and supplementary analyses were undertaken using non-destructive X-ray (XRF/XRD) and Raman spectroscopy. This paper describes some of the new findings on the materials and techniques used in the production of wall paintings and the red-granite sarcophagus lid, as well as some of the conservation issues involved with the site.

Conservation of the paintings on the walls and ceilings

One of the most important objectives of the 2011–2012 season was to complete the cleaning and consolidation of paintings on the walls and ceilings. Since the last season in 2004, conservation work on some areas of the tomb was still awaiting completion. These areas were in Room E (north wall and ceiling), Room I (ceiling), Room J (south and east faces of pillar 3, north face and small sample on east face of pillar 6, and small parts on west and south walls and ceiling), and Room Je (north and west walls) (Fig 3.1).

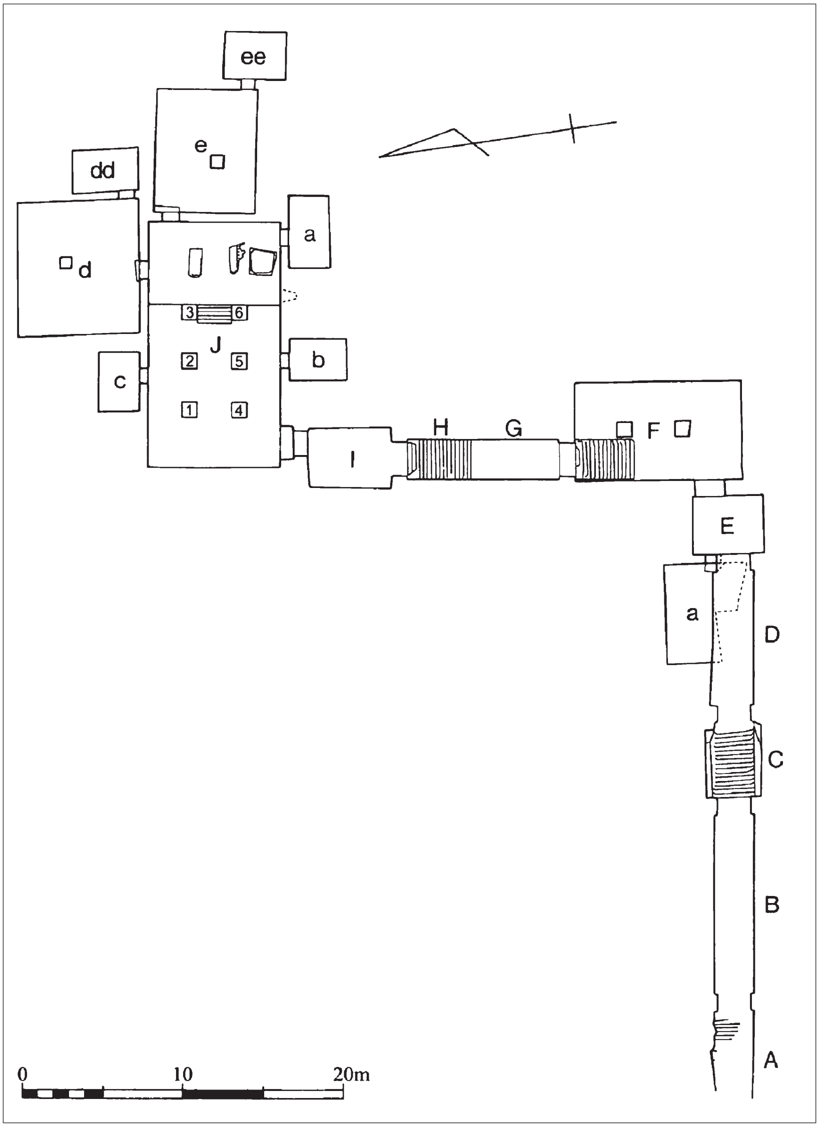

Figure 3.1. Plan of the tomb of Amenophis III (KV-22) © Institute of Egyptology, Waseda University.

To prevent further decay, the detached plaster layers were consolidated by injecting grout between the bed-rock and plaster using a syringe or applying plaster at the edges with a spatula. The formula of the grout is generally similar to the original formula used by the ancient Egyptians (a mixture of gypsum, fine sand, *hib*, and water), or acrylic resin emulsion when the space is narrow. After securing the plaster layer onto the bed-rock, the cleanup of bat excrement and micro-organisms proceeded. The choice of cleaning agents was based on the nature of the substances to be removed and the resistance of the original paint layer. The cleaning solution was applied through Japanese tissue paper and left until the paper absorbed the dirt and bat excrement, and swelled and softened. Then, mechanical cleaning by scalpel followed. Poultice using sepiolite with water was effective to absorb deep residues and stains from the inner layers of the plaster. The result of the work was documented with daily drawings and photographs taken at the end of the season.

Bright colours in Room E, I, J were uncovered after removal of the dirt, increasing the legibility of the ancient paintings. Further detachment of the plaster from the wall was prevented by consolidation. These steps will allow more detailed egyptological and art historical observations. This is especially the case in Room Je, where the painting was unfinished in ancient times, and the documentation of ancient painting process was made possible (Fig. 3.2).

The documentation of wall paintings in the tomb for archiving and digital processing was started by a team led by Takao Kikuchi, with digital image processing experts (Inui *et al.* 2011; 2012; Sato *et al.* 2012). It is hoped that fragments dispersed to the British Museum (EA38500, EA49670, EA49672, and EA55317) and the Musée du Louvre (N521a and b, E13100) will also be incorporated in the future.

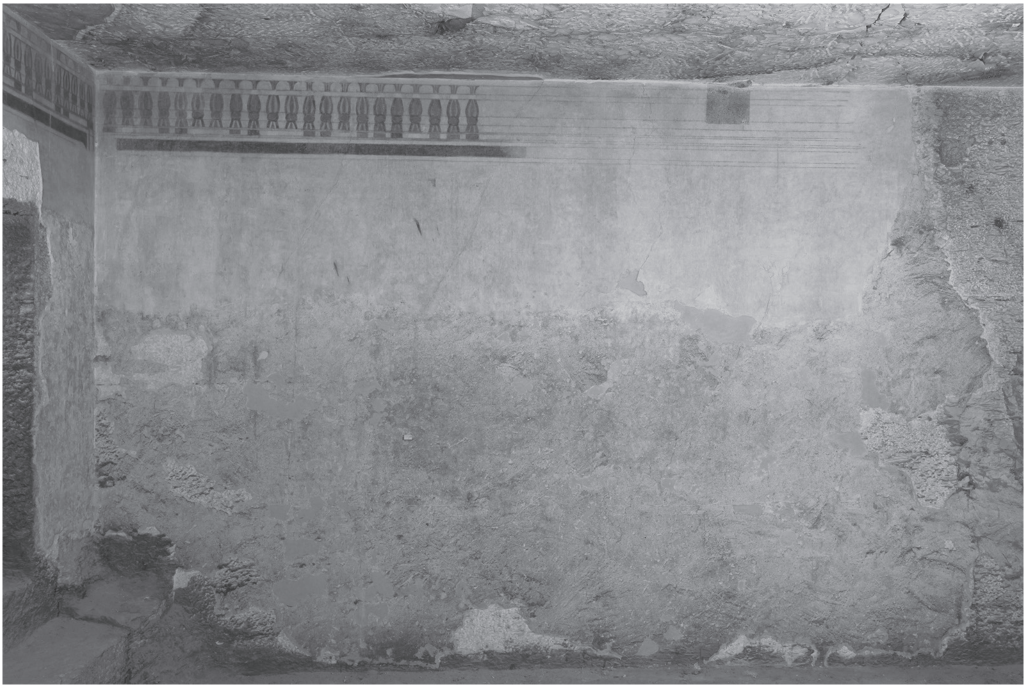

Figure 3.2. North wall, Room Je after conservation, © Institute of Egyptology, Waseda University.

Complementary scientific analyses

During the course of our work, non-destructive analyses were undertaken to answer specific questions regarding the materials and techniques of the wall paintings. The basic components of pigments had been identified already during the first and second phases of work using portable X-ray fluorescence spectrometer (XRF), X-ray powder diffractometer (XRD), and optical microscope (Uda *et al.* 2004). Complementary to X-ray analyses, portable micro Raman spectroscopy (MRS) was employed for the identification of the chemical composition of materials during the 2011–2012 season by the group of scientists led by Izumi Nakai (Takahashi *et al.* 2013). This method is advantageous as it can identify light elements. Because it operates with a microscopic system and a CCD camera, analysis can be targeted to the particular colour of the grain in the mixture of pigments under ×20 magnification.

Identification of the blue-grey pigment

During the 2011–2012 season, analysis in the tomb was especially focused on the different shades of the 'blue-greyish' background of the paintings in Rooms E and I, and on the pillars in Room J. In a previous report, chronological differences were discussed based on artistic styles. It was suggested that the paintings in Room E and Pillars 3 and 6 in Room J are typical of the style of Amenophis III after his 30th year of rule (Johnson 1998, 81–85; Kawai 2004, 143). There are not only stylistic differences but also technical differences. For instance, the 'blue-greyish' colour of the background is slightly different in Rooms E and I, with that in Room E darker or more grey (Kawai 2004, 143). In recent studies, analyses were conducted in other tombs identifying the pigment for blue grey or light blue backgrounds. In most cases, it was determined to be a mixture of Egyptian blue, carbon black, and gypsum or calcite (McCarthy 2001, 21; Mahmoud 2011, 102). Examination under microscope revealed differences in appearances under ×20 magnification. The background 'blue-greyish' colour is composed of larger grains of blue and black pigments scattered at a distance, producing the light shade in Room I (Takahashi *et al.* 2013, fig. 24–(b)). Smaller grains of blue and black pigments in a mixture that covers the surface evenly produce the darker shade in Room E (Takahashi *et al.* 2013, fig. 24–(c)).

The 'blue-grey' background on Pillar 6 is similar to that of Room E and corresponds to the suggested chronology of the paintings. Moreover, comparison with XRF results suggests a different chemical composition of the pigments. The use of manganese black is suggested in Room I and not in Room E or Pillar 6 in Room J. Instead, the use of carbon black is suggested by comparing the Raman spectrums of black particles in the pigment of Room E with the known spectrum of carbon black (Takahashi *et al.* 2013, fig. 27).

Another interesting difference appears in the chemical composition of Egyptian blue in Rooms I and E. The XRF spectrum showed the presence of arsenic in the Egyptian blue in Room I, which is probably derived from an impurity in copper ore. The XRF spectrum of Egyptian blue in Room E showed traces of arsenic along with tin, which may suggest the recycling of bronze scraps for the production of the Egyptian blue. Studies by Jaksch *et al.* (1983) and El Goresy (2000) on New Kingdom monuments explained the chronological distribution of tin bearing synthetic copper pigments, suggesting a transition from arsenic to tin, which first appeared during the reign of Tuthmosis III (although there are also few instances of use of arsenic copper, *e.g.* Tomb of Merire I, II, Amarna North; Jaksch *et al.* 1983, table 1; El Goresy 2000, table 2).

Identification of pigments on palettes

Analysis was also conducted on other objects, now stored at the magazine in al-Qurna, during the archaeological cleaning of KV-A (Yoshimura *et al.* 2011). The main focus was on the pottery shards used as palettes containing different colours of pigments, including blue, red, black, yellow, and white. It is assumed that they were used by ancient painters who worked in the royal tomb of Amenophis III. Three shards containing blue and black (Takahashi *et al.* 2013, fig. 5, O195, O197, O456), one shard containing only blue (Takahashi *et al.* 2013, fig. 5, O018), and another shard containing only black were analyzed (Takahashi *et al.* 2013, fig. 5, O012). The blue was identified as tin-bearing Egyptian blue and the black was identified as carbon black. One shard contained yellow, red, and white pigments, which were identified as orpiment, hematite, and huntite, respectively (Takahashi *et al.* 2013, fig. 5, O059).

Results showed good correspondence with the pigments attested in the tomb as well as the technique of mixing colours for making different shades used in the paintings of the royal tomb of Amenophis III. In particular, the chemical compositions of blue and black suggest that the fragments are related to the activity in Room E (or on pillars 3 and 6 in Room J).

Conservation and stabilisation of pillar 3 in Room J

Another main aim of the third phase of work was to restore cracks in the pillars and walls in the tomb. In particular, our focus was on how to stabilise the cracked pillar 3 in Room J. This was complicated because the pillar has paintings on its surfaces. The temporary wooden prop set up in 1990 hindered the aesthetic value and hampered conservation of the paintings on its surface. Meetings were organised on-site and off-site with specialists including engineers, architects, conservators, archaeologists, and SCA representatives, to discuss the restoration procedures and materials.

It was agreed that the first step should be the replacement of the wooden support with five latchet belts. This replacement ensures a more stable condition and will facilitate future interventions (Fig. 3.3). The conservation work, including the injection of grouting, is to be performed in the next season. Meanwhile, strength and usability tests will be undertaken in a specialised lab in Japan, to determine how to solve the problem of the crack on pillar 3.

Trace of ancient restoration on pillar 3

During closer observation and documentation of pillar 3, traces of ancient restoration were found along an ancient crack. With a raking light, a very thin layer of overlaying plaster less than 1 mm was observed along the openings of the crack. It appears the crack began to open soon after the completion of the paintings and the opening was covered by plaster and painted to match surrounding paintings to hide the failure. However, it opened again through the ages. Furthermore, the upper edge of the crack on the north face shows an original defect in the bedrock caused by a natural fissure in the limestone. The presence of a trace of thick ancient mortar and limestone chips to fill the defect of the bedrock behind the plaster of the wall painting shows that this problem was already present before the pillar was plastered. Similar treatment was observed in other cracks on the northern wall in Room J. Conservation decisions were made in consideration of these historical facts. The present situation was recorded by detailed drawings and photographs.

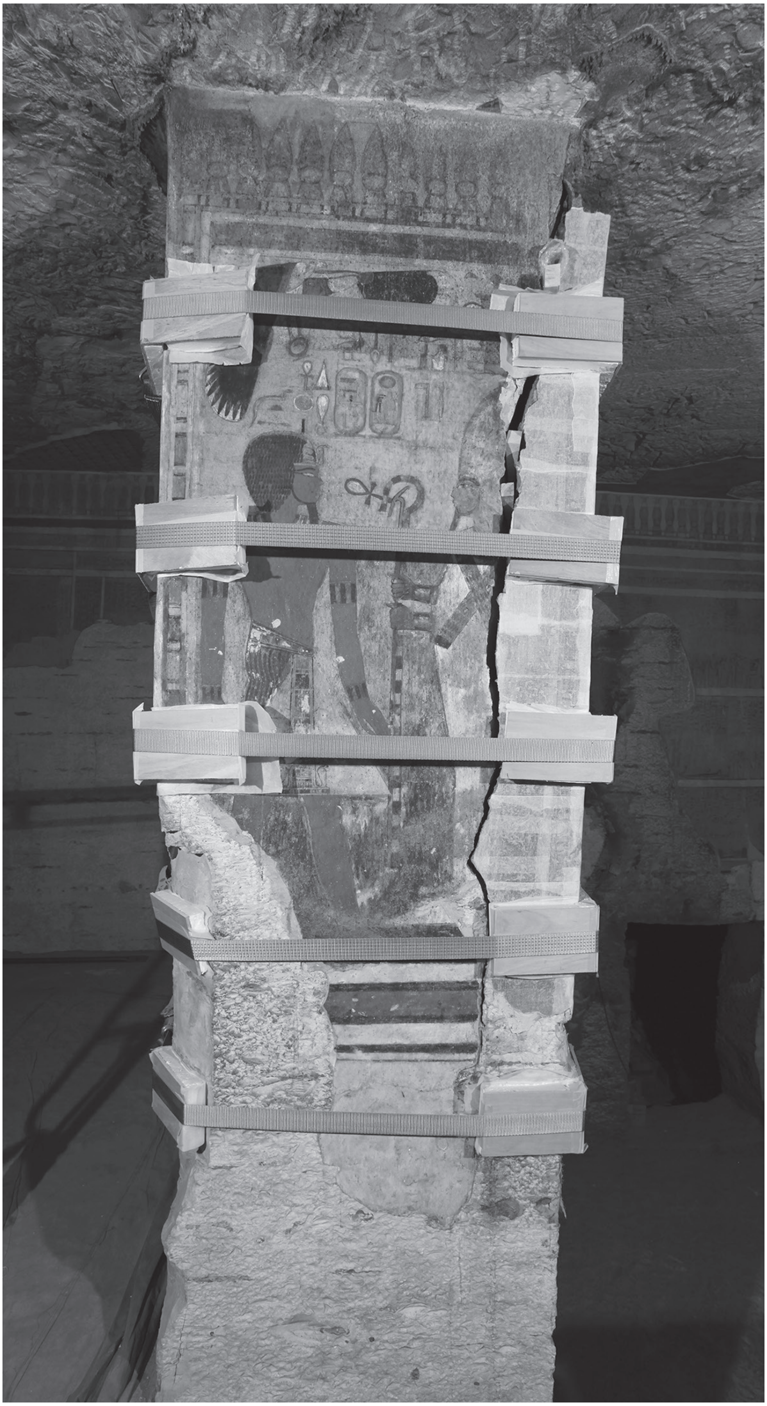

Figure 3.3. South face, pillar 3 after, © Institute of Egyptology, Waseda University.

Restoration of the sarcophagus lid

During the archaeological cleaning of Room J, the red granite-lid of the sarcophagus was found upside down near the eastern wall (Hayes 1935, pl. XVI ; Yoshimura *et al.* 2008, 140, figs 133–135, 138, 139, pls 47–2, 53, 54). The lid was broken into two large pieces and small fragments were scattered around. When reconstructed, the lid measured 284 × 135 × 30.9 cm in height. Dust and excrement from bats had accumulated on the surface of the stone, covering some inscriptions and reliefs. During the third phase of work, conservation of the red-granite lid was undertaken by the stone conservator Hiroko Kariya. The treatment included cleaning, consolidation of pigment and gold leafs, mending the small fragments, and setting the lid on a mount (Yoshimura *et al.* 2013). Prior to the work all fragments were observed, measured, photographed, and recorded in a database. As Hayes found and mentioned in his publication (1935, 171), we too were unable to locate or identify a single piece of the sarcophagus, and we concluded it must have been dragged out of its original tomb in a complete state and reused elsewhere.

During conservation, the surface of the granite was carefully examined by hand-held digital microscope and head lens with LED light. Traces of pigments and minute parts of gold leaf were found on the surface. Hayes' publication mentioned 'traces of yellow in hieroglyphs and figures' (1935, 171) and the systematic survey of the sarcophagi of New Kingdom kings by El Goresy identified the yellow pigment in hieroglyphs and figures as orpiment (2000, table 1). The use of orpiment was also confirmed by our analysis. Although Hayes did not remark on it, saying that 'none-other than the natural red of the granite', the use of iron bearing pigment, red ochre or hematite, was identified in the pink-red pigment on the entire exterior surface. It was probably intended to enhance the red colour of the granite like other sarcophagi in the royal tombs of the 18th dynasty (*e.g.* KV20, KV38, KV34, KV43; Hayes 1935). A number of tiny pieces of gold leaf (less than 5 mm) were found on the exterior, especially on the rim of the lid. It is difficult to conclude whether the lid was partially gilded or if the leaf was accidentally attached to the surface during the dismantling of gilded shrines that may have surrounded the sarcophagus. Additionally, blackish spots of soot and resinous materials were observed. The decision was made to not clean these spots as they were considered traces of use and evidence of destruction in the past. Finally, an iron-steel support and a mirror were fabricated locally. The lid was mounted on this support and the mirror was installed under the lid to allow visitors to view the decoration on the underside of the lid (Fig. 3.4).

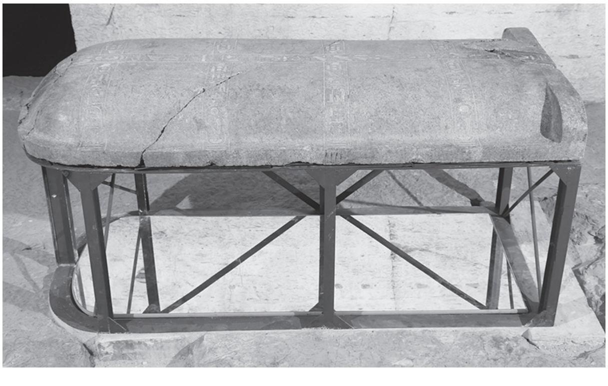

Figure 3.4. Sarcophagus lid after conservation, © Institute of Egyptology, Waseda University.

Conclusion

During the 2011–2012 season, the conservation of the paintings on the walls, pillars, and ceilings of Rooms E, I and J was nearly completed. An important biography of ancient restoration was documented with the conservation of pillar 3 and its wall painting. Additional intervention considering the historical background of this pillar shall take place during the next season.

Furthermore, conservation and restoration of the sarcophagus lid were also carried out. Over 200 pieces were joined together and the surface cleaning was completed. The lid was installed on an iron-steel mount with a mirror for its presentation. During this work, close observations and examination of conservation resulted in establishing the techniques and the materials used in the wall paintings and red granite sarcophagus lid of Amenophis III. To conclude, it is important to mention the several aspects of work to be completed in future seasons to ensure the long-term preservation of the tomb. They include (1) stabilisation and monitoring of cracks in the walls and pillar of Rooms J and Je; (2) completion of the cleaning of the limestone bedrock contaminated by bats; and (3), most importantly, outlining and implementing the site management plan for the tomb through consultation with different stakeholders.

Acknowledgements

In closing, we would like to express our deep appreciation to Mohammad Ibrahim Ali, former Minister of State for Antiquity Affairs (MSA) and Mustafa Amin, former Secretary General of SCA for granting permission and for their unfailing cooperation. We are also grateful to members of the Permanent Committee of MSA, especially to Abdel Hamid Maroof, General Director of the Egyptian Antiquities sector of MSA,. Mohammad al-Bialy, Under Secretary of State of MSA, and Mohammad Ismail, General Director of the Foreign Mission's Affairs of the Permanent Committee for their kind cooperation and understanding. Thanks are also due to Mansour Boraik, General Director of the Central Administration of Upper Egypt, Mohammad Assem Abdel Sabour, General Director of Upper Egypt and Luxor Antiquities, and Ibrahim Soliman, Director General of the Temple of Karnak for their kind cooperation. Finally, we would like to thank. Mohamed Abdel Aziz, General Director of the Inspectorate at al-Qurna, Nour Abdel Gafar Mohammad, Deputy Director, and Mohammad Aly at the Office of Foreign Mission's Affairs at al-Qurna, and Afaf Fillips and Ahmed Aly, Director and Deputy Director of the Conservation Department of Upper Egypt and Luxor Antiquities for their kind cooperation in every possible way. During the 2011–2012 season, there were five inspectors to our mission at the site − Ahmed Yassin, Mahmoud Hosni, Mahmoud el-Azab, Ahmed Hassan, and Aly Saad – and we would like to show our appreciation for their cooperation and help throughout the season.

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4

Copper Model Tools in Old Kingdom Female Burials

Martin Odler

Several Old Kingdom tombs have been identified as female burials based either on funerary inscriptions, anthropological examinations, or the assumptions of the excavators inferred from the archaeological context. Besides the typical Old Kingdom burial equipment, workmen's model tools appeared in female burials as well. Although Old Kingdom women bore administrative and court titles (Fischer 2000), they only rarely held those connected with the organization of work, and they were not craftsmen themselves (Bryan 1996, 39–40; Robins 1993, 116). A detailed study of these assemblages shows that the inclusion of copper model tools in female elite burials was typical of the Old Kingdom Memphite funerary customs. Moreover, the appearance of copper model tools might actually have been connected with the economic activities of Old Kingdom women. These arguments will be discussed in the following paragraphs.

The tomb of Nefer (AS 68d) in Abusir South

The latest Old Kingdom female burial with copper model tools was documented at Abusir South at the concession of the Czech Institute of Egyptology. Among the tombs of Princess Sheretnebty's relatives, tomb AS 68d was explored in 2012 (Bárta 2013; Bárta *et al.* 2014; Vymazalová and Dulíková 2012; 2014). The entrance of the tomb was flanked by two uninscribed limestone *naoi* depicting two men and a woman, most probably the tomb owners. This rock tomb originally contained three false doors and four shafts. Two false doors were stolen sometime after the completion of the tomb, together with some contents from the serdab. However, four statues were left in the serdab, including one dyad depicting a couple: Nefer with his wife Neferhathor.

The southernmost false door, which was completely preserved, was intended for the funerary cult of Nefer and his wife. The openings of both shafts were located in front of this false door. Shaft 2 of the tomb was excavated during the autumn season in 2012. It is 6.5 m deep and the burial chamber had been disturbed, but it contained some remains of the original burial equipment: a large white limestone sarcophagus containing the skeleton of the chamber owner, and faience beads from one or two collars. More finds were positioned on the eastern outer side of the sarcophagus: cattle bones, a copper bowl with copper model tools, four limestone canopic jars, two beer jars, and three wooden models of ships. Except for the wooden model ships, the artefacts are representative of typical Old Kingdom elite burial equipment. Dated contexts with wooden model ships have so far been identified only for the late 6th dynasty (Stephens 2012, 3). On the other hand, ships were included in offering lists already in the 4th dynasty, namely on the sarcophagus of Prince Minkhaf (Smith 1933).

The skeleton was examined by a physical anthropologist, who identified the individual as a woman over 50 years of age at the time of death. The gender was indicated by a fragment of the pelvis bone with the preauricular sulcus. The deceased was about 156 cm tall and had in life suffered from teeth problems and arthrosis of the mandibular neck. Her skeleton underwent apparent degenerative changes due to ageing, but it is interesting to note that this woman did not do any hard physical labour during her life, as can be seen by the absence of enthesopathic changes on the bones (Havelková 2013).

Social status of Nefer and Neferhathor

The woman buried in Shaft 2 was most probably Neferhathor, the tomb owner's wife. Neferhathor bore the title 'king's acquaintance' and two others which connected her with the cult of the goddess Hathor (Begelsbacher-Fischer 1981, 53–78; Galvin 1981), *i.e.* 'priestess of Hathor in all her (cult) places' and 'priestess of Hathor, Lady of the nehet-shrine'. The shrine of Hathor existed in the late 5th dynasty somewhere in Abusir or Saqqara (Begelsbacher-Fischer 1981, 57). Neferhator's husband was an important official who participated in the economic spheres of the Old Kingdom state. He bore several scribal titles ('overseer of scribes of royal documents', 'scribe of the royal documents'), titles connected with the storage of commodities ('overseer of the two treasuries', 'overseer of the two granaries') and organization of work for the king ('overseer of scribes of the crews', 'under-supervisor of scribes of the crews', 'overseer of a gang of craftsmen'). Nefer was also a 'property custodian of the king' and 'one who is privy to the secret', the titles decreasing in importance in the latter half of the Old Kingdom (see Bárta *et al.* 2014). We can conclude that Nefer and Neferhathor as members of the elite played an important part in the country's economic administration (Strudwick 1985, 251–299) and in Hathor's cult.

Copper finds from the burial chamber of Shaft 2

Fragments of a few copper model tools were found at the bottom of Shaft 2 (find no. 189/AS68d/2012; Fig. 4.1). They indicate that the original assemblage was larger and that some of the pieces might have been stolen. The remains included one bowl and several copper model tools (find no. 193/AS68d/2012; Fig. 4.1). The weight of the whole corpus is presently almost 100 g, with the bowl weighing about 50 g. The assemblage contained a complete axe blade (24 × 34 mm, weight 2.4 g), seven complete chisel blades (lengths 66–72 mm, widths 3–3.5 mm, weights 1.2–2.1 g), a complete adze blade (52 × 9 mm, weight 1.7 g), and a complete saw blade (89 × 11 mm, weight 2 g), together with more than 20 additional fragments of these tool types (a selection of them can be seen in Fig. 4.1 and their identification in Fig. 4.8). The copper tools had been placed inside the bowl, which was partially damaged on one side. Only the chisel blades bore the remains of their wooden handles.

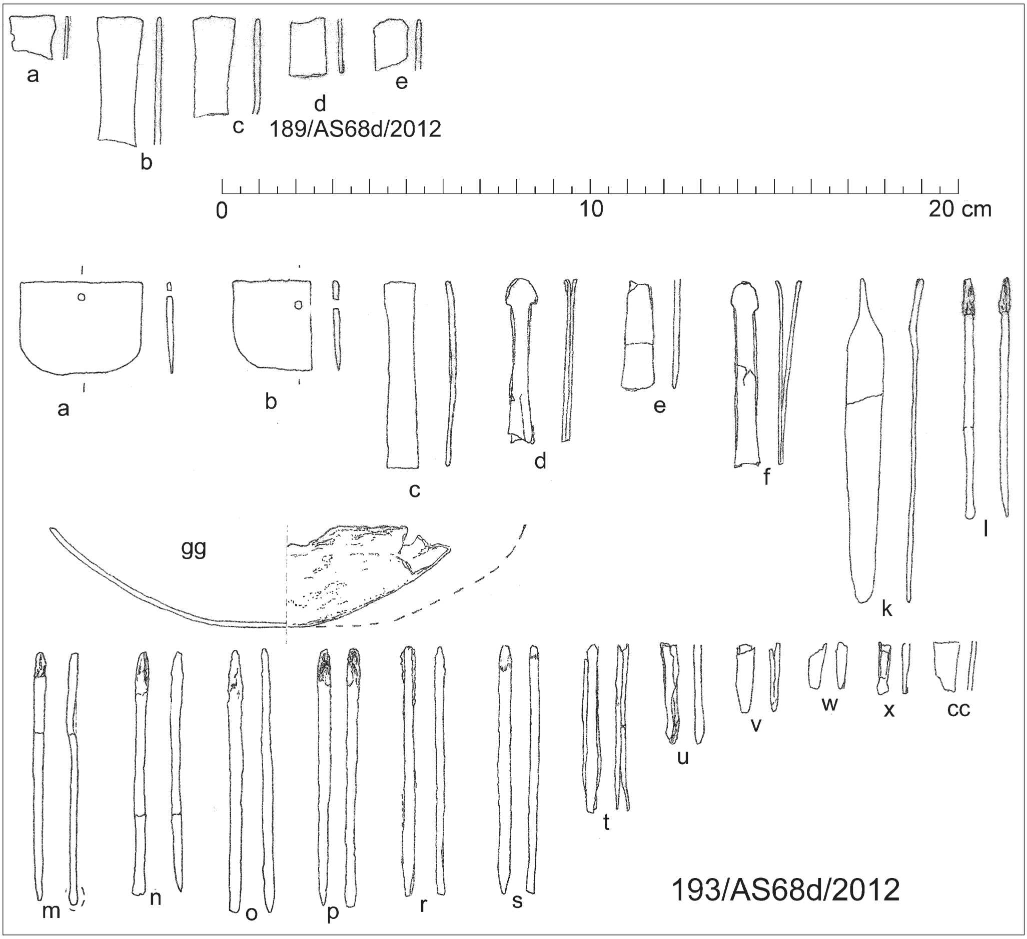


Figure 4.1: Copper artefacts from the burial equipment of tomb AS 68d, Shaft 2, identified as the burial of Neferhathor. Drawing by Martin Odler, Valéria Uramová.

Old Kingdom female burials with copper model tools

The following paragraphs will examine in detail the Old Kingdom burial assemblages of women that contained copper (model) tools, in order to explain the presence of the copper model tools in Neferhator's burial equipment. These contexts have been preserved by chance, but there are some recurring patterns in the contents of the burial equipment. These patterns might have been the results of similar cultural practices (Parker Pearson 1999, 84), assuming that these contexts were created meaningfully (Meskell 1999b, 177).

Fourteen Old Kingdom female tombs have been found with burial equipment that contained copper model tools and, in one case, supposed full-size tools (Table 4.1). Copper model tools were included in the burial equipment of queens, princesses, and women of the elite, *e.g.* Nensedjer-ka, whose husband is not mentioned in her tomb at Giza (a common feature of Old Kingdom tombs of women, see Roth 1999).

Table 4.1. Old Kingdom female burials with copper tools and copper model tools (spans pages 42 and 43 and continues across pages 44 and 45).

Burial equipment no.	**Site and part of site**	**Feature**	**Owner**	**Social status**	**Date**
1	Giza – Cemetery G I S	G 7000 X	*Ḥtp-ḥr.ś*	queen, wife of Snofru, mother of Khufu	Dynasty 4, the reign of Khufu
2	Giza – Eastern cemetery of Khufu	G 7530-7540	*Mr.ś-ꜥnḫ ꞼII*	queen	Dynasty 4, the reign of Khafre [Callender]
3	Giza – Western field, cemetery G 4000	G 4140	*mrt-ꞽt.s*	princess	Dynasty 4, middle or late [PM]
4	Giza – Central field	G 8250, tomb of princess	–	princess, daughter of Rakhef [Hassan]	Dynasty 4, end [PM]
5	Giza – Western field	G 4970	*Ḫntt-kꜣ Ḫnt*(*y*)	wife of *nśwt-nfr*	Dynasty 5, beginning of or middle [PM]; Dynasty 5, early, the reign of Sahure [Kanawati]
6	Abusir Central – minor royal cemetery	pyramid complex Lepsius 24	burial chamber of pyramid Lepsius 24	queen	Dynasty 5, the reign of Raneferef or Niuserre [Krejčí]
7	Abusir Central – Djedkare's family cemetery	tomb AC15	*H̱krt-nbty*	princess	Dynasty 5, the reign of Djedkare Isesi [Verner]
8	Abusir, cemetery of pyramid of Niuserre	Tomb of *wsr-kꜣ=f-ꜥnḫ*	chamber of the wife, *wsr-kꜣ=f-ꜥnḫ*		Dynasty 5, the reign of Niuserre
9	Abusir – Abusir South	AS68d, tomb of Nefer	*Nfr-ḥwt-ḥr*	most probably wife of Nefer	Dynasty 5, the reign of Djedkare Isesi [Vymazalová – Dulíková]

Titles	**Context**	**Context description**	**Bibliography**	**Figure**
mwt nśwt-bỉty; for other titles see Callender (2011, 63–4)	primary	toilet utensils were found in the reconstructed inlaid box, tools were left on two places in the chamber with the burial equipment of Queen Hetepheres	Reisner and Smith (1955, 36–47, figs 36–37, 38, 45; pls. 30a–c, 40a, c, d); Radwan (1982, 45, Taf. 21: 120), Callender (2011, 60–66)	7
ḥmt nśwt mrt.f, zꜣt nśwt nt ẖt.f; for other titles see Callender (2011, 121–3)	secondary	found in the debris on the floor of burial chamber	Dunham and Simpson (1974, 23, Fig. 16b), Callender (2011, 119–29)	7
zꜣt nśwt nt ẖt.f	secondary	found in the debris on the floor of burial chamber	Reisner (1942, 464, fig. 279, pl. 58f), PM III 1, 124	7
no preserved title	primary	On the photo of tomb in burial chamber, near the mouth of sloping corridor in the eastern side of burial chamber. Around the waist of the deceased: a copper belt plated with sheet gold. Besides this lot of golden jewellery.	Hassan (1953, 5, pl. VI: B); PM III 1, 239–40	7
ỉry(*t*) *ḫt nśwt, ḥm*(*t*)-*nṯr Nt, ḥm*(*t*)-*nṯr Ḥ wt-ḥr*	secondary	in the filling of the northern shaft, belonging to the wife of Nsw-nfr	Junker (1938, 166)	8
no preserved title	secondary	found scattered in various places on the floor of burial chamber of the pyramid and under the level of the floor in some cases	Krejčí *et al.* (2008, 121–127, figs 4.81b–4.87)	8
zꜣt nśwt nt ẖt.f mrt.f; for other titles see Verner and Callender (2002, 13)	primary	near the north-eastern corner of the sarcophagus	Verner and Callender (2002: 45)	8
	secondary	found in debris southwards from sarcophagus, together with fragments of ceramic and stone vessels and faience beads	Borchardt (1907, 116)	
ỉry(*t*) *ḫt nśwt, ḥm*(*.t*)-*nṯr Ḥwt-ḥr m śwt.ś nb*(*wt*), *ḥm*(*.t*)-*nṯr n Ḥ wt-ḥr nb*(*t*) *nht*	secondary	found eastwards from the sarcophagus inside a copper bowl	Vymazalová and Dulíková (2012; 2014), Bárta (2013), Bárta *et al.* (2014)	8

Table 4.1. Old Kingdom female burials with copper tools and copper model tools (continued).

Burial equipment no.	**Site and part of site**	**Feature**	**Owner**	**Social status**	**Date**
10	Giza – Western field, cemetery G 4000	G 4631	*Nn-śḏr-kꜣ*(.*ỉ*)		Dynasty 5 [PM], Dynasty 5, reign of Userkaf [clay sealing in burial chamber]
11	Giza – Western field	D208, shaft 9			Dynasty 5, the reign of Niuserre [Steindorff]; Dynasty 5–6 [PM]; Dynasty 5, late – Dynasty 6, early [Spiekermann]
12	Saqqara, Teti pyramid cemetery	pyramid of Iput	*ỉpw.t*	queen, mother of Pepy I	Dynasty 6, the reign of Teti
13	Saqqara, pyramid cemetery of Pepy I	pyramid of the Western Queen		queen	Dynasty 6, the reign of Pepy I
14	Giza – Western field	G 5070, shaft 315		wife of the owner of tomb most probably	Dynasty 6 [Junker]; late Dynasty 5 – early Dynasty 6 [Haag *et al.*]

Several contexts from Table 4.1 require detailed discussion. It is assumed that the objects found in Structure G7000x at Giza belonged to the burial equipment of Queen Hetepheres. As far as copper model tools are concerned, the burial of Hetepheres at Giza is not a standard burial of a member of the Old Kingdom elite, a trait which might be added to the ‘unique features’ of this context (Münch 2000). It seems that the craftsmen left their own tools in the burial chamber instead of copper model tools, which started to appear at the beginning of the 4th Dynasty at Meydum in Mastaba 17 (Petrie *et al.* 1910, 4, pl. XI: 7).

In the case of Tomb G 8250, the excavator assumed that the woman was a princess, but this conclusion has not been corroborated by any find from the tomb (Table 4.1: 4). Nevertheless, the tomb and its contents indicate that she was a member of the elite.

Two women in the table have been identified as such after the excavator’s assumption (Table 4.1: 6, 14). The pyramid of Lepsius no. 24 at Abusir is a type of archaeological structure built in the Old Kingdom for queens, mostly queen mothers (*e.g.* Jánosi 1996; Krejčí *et al.* 2008, 146–150). However, the name of the owner was not found during the excavation. Because of the

Titles	**Context**	**Context description**	**Bibliography**	**Figure**
ỉry(*t*) *ḫt nśwt, ḥm*(*t*)*-nṯr Nt, ḥm*(*t*)*-nṯr Ḥwt-ḥr*	secondary	found in the debris on the floor of burial chamber	Reisner (1942, 497, fig. 304a; pl. 64f); PM III 1, 134	8
	primary	The opening of shaft 9 was located in the pillar hall of the tomb. The models were found in front of longer side of sarcophagus, on its eastern side, together with calcite and copper vessels. Gilded copper headband was found in the same chamber.	Steindorff and Hölscher (1991, 103); http://www.giza-projekt.org/Mastaba/Mastaba_D207_208.html; Spiekermann (2011, 43–46)	8
	secondary	Found on the debris of limestone fragments, filling up to the level of sarcophagus burial chamber	Firth and Gunn (1926, 12, fig. 6); PM III 2, 396–7, Callender (2011, 235–238)	
	secondary	Found in the eastern part of partly destroyed burial chamber	Leclant – Clerc (1990, 364–365, fig. 36–37); Labrousse – Albouy (1999, 144), Callender (2011, 235–238)	
	primary	Eastwards from the burial and on the southern end of the burial goods, in the ceramic bowl and on the floor of the chamber	Junker (1944, 61–2, Taf. XI), Haag *et al.* (2013, 226–227, 246–247)	8

position of the pyramid in the royal necropolis, she might have been the spouse of Raneferef or Niuserre. Tomb G 5070 belonged to an official with lower status and contained two undisturbed burial chambers in shafts 315 and 316 (Table 4.1: 14). The excavator assumed that a wife of the tomb owner was buried in the second shaft.

Burial customs changed during the 4th Dynasty in terms of the demonstration of ‘conspicuous consumption’, which was transferred to the tomb building itself, *i.e.* tomb superstructures. Conversely, burial equipment became rather poor and the substructures more modest in scale and elaboration (Roth 1993b). The ostentation phase was replaced by relative simplicity in the goods accompanying burials (Parker Pearson 1999, 86–87). Copper tools first appeared in burial equipment of queens and princesses in the 4th Dynasty, as demonstrated by the Giza findings (Fig. 4.2). In the 5th dynasty, they also began to be included in the burial equipment of officials’ wives. For the 6th dynasty, the models have been found in equipment belonging to two queens at Saqqara (Table 4.1: 12, 13) and to the wife of an official at Giza (Table 4.1: 14).

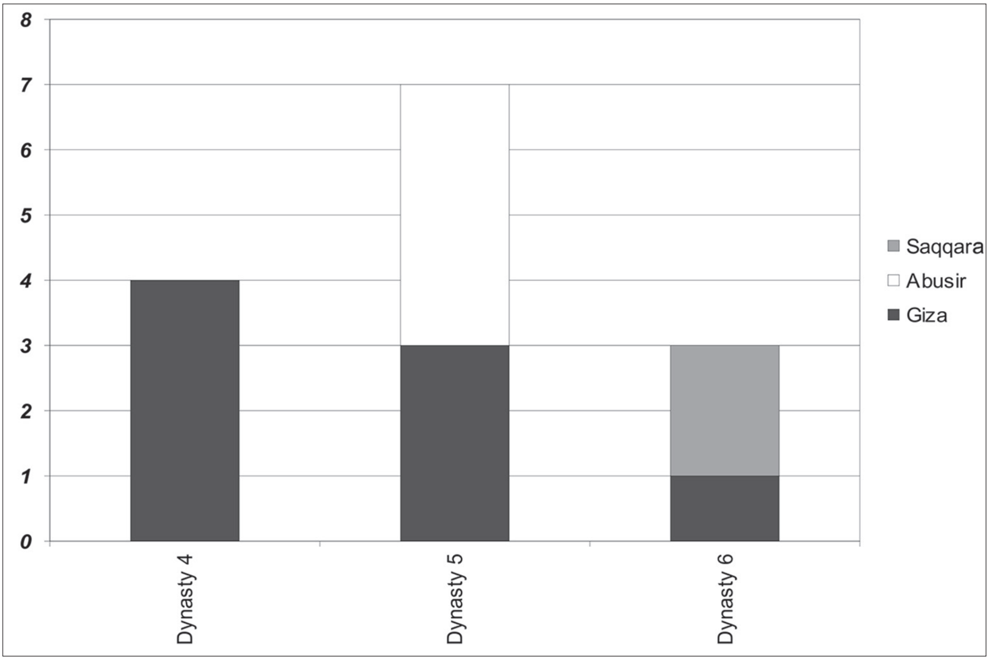


Figure 4.2. Sites with Old Kingdom female burials with copper tools and copper model tools.

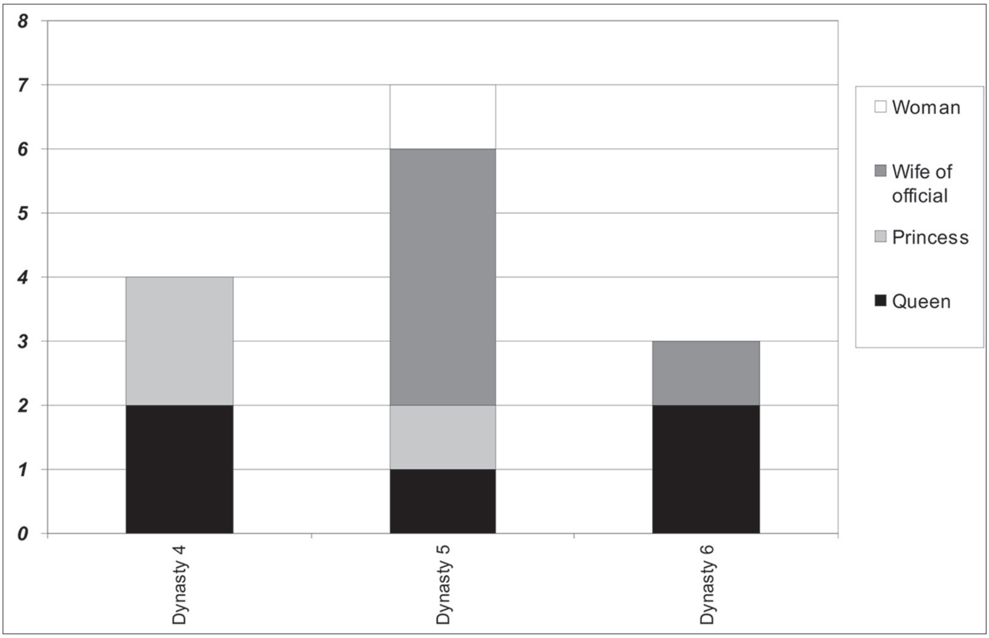


Figure 4.3. General social status of Old Kingdom female burials with copper tools and copper model tools.

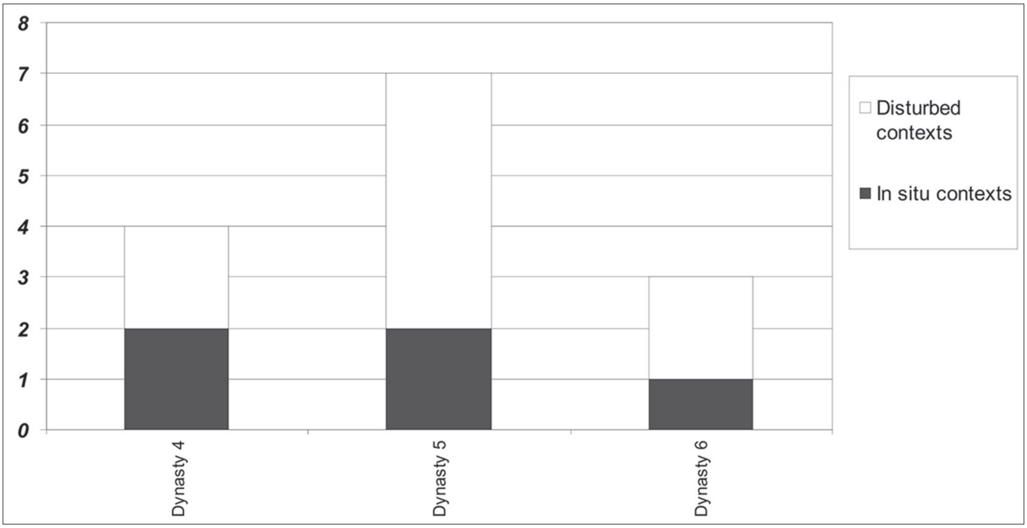


Figure 4.4. Archaeological contexts of Old Kingdom female burials with copper tools and copper model tools.

Model tools in women's burials have so far been identified only in assemblages from the Memphite necropolis. When the titles of the women were preserved, they were mostly connected with the service of the goddesses Hathor (Begelsbacher-Fischer 1981, 53–78; Galvin 1981) and Neith (Begelsbacher-Fischer 1981, 111–120). Due to the lack of preserved titles in other contexts, the identification of social status is possible only for queens, princesses, and officials' wives (Fig. 4.4). In some cases the titles of the husbands are known, *e.g.* Userkafankh was a nomarch and overseer of all royal works (Table 4.1: 5; Strudwick 1985, 72–73) and Nefer-ihy was the overseer of the tomb builders (Table 4.1: 11). Nefer from Abusir South (AS 68d) bore a higher status than Nefer-ihy and a lower one than Userkafankh.

The identification of copper model tools

The interpretation of model tools in scholarly works is by no means uniform. They have been identified as surgical or mummification tools by some archaeologists (*e.g.* El-Sawi 1979, 72), or as precursors of foundation deposits (this interpretation was first criticised in Brunton 1947). The terminology used in excavation reports might have caused an incorrect evaluation of the artefacts, *e.g.* the identification of the tools in the monograph on the pyramid Lepsius 24 at Abusir is incorrect (Table 4.1: 6). Although the models from the pyramid of the western queen at Saqqara were described in the text, the published photograph makes it possible to identify that the 'crochets' ('hooks') were, in fact, wooden model hafts of adzes (Table 4.1: 13).

The evidence is sufficient to identify these artefacts as copper model tools, which is also the most frequent interpretation in publications (earlier discussions by Junker 1944, 58–60, and Hassan 1948, 39–43). Crafts using tools made of copper blades and wooden hafts and handles belonged to a specific category in ancient Egypt, best defined in *The Teaching of Khety* (Quirke 2003). The main Old Kingdom evidence for this comes from offering lists (Barta 1963), which

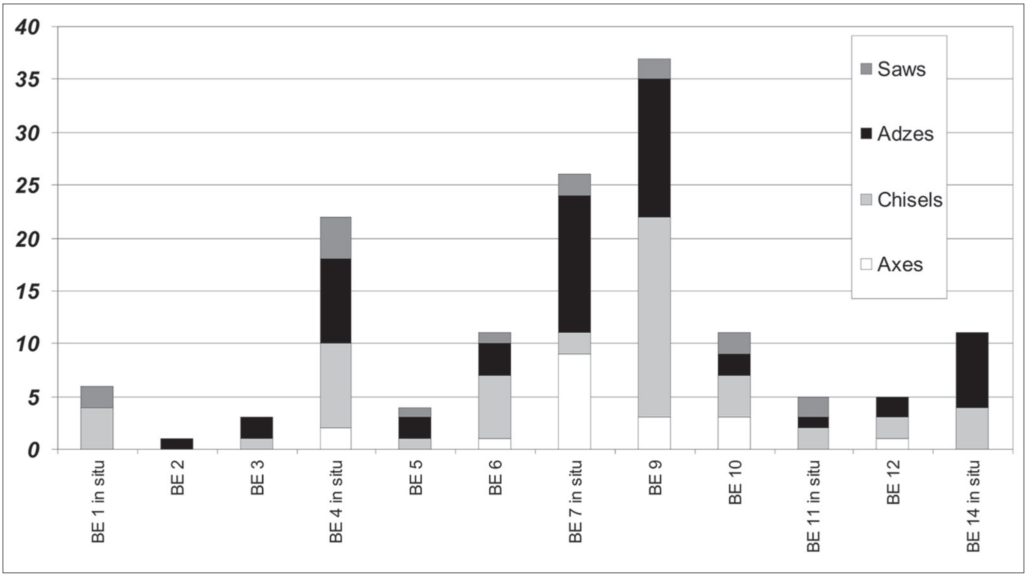


Figure 4.5. Contents of the assemblages of Old Kingdom female burials with copper tools and copper model tools.

make it possible to establish the contents of the tool assembages (Drenkhahn 1976, 117), although copper tools appear to have been a marginal feature (only four examples from the 3rd to the 5th dynasty have been found, (Barta 1963, 45–46). The lists reveal that the assemblages contained axes, chisels, adzes, and saws. With one exception, these tools have been correctly identified already by Junker and Hassan in the 1940s. Saws used to be identified as knives in the past, but a comparison with with Old Kingdom iconographic sources and later models of saws without teeth (*e.g.* Winlock 1955, pl. 69) points to their correct identification. The assemblages match the tools used in Old Kingdom tomb scenes with carpenters, shipwrights, and sculptors (Drenkhahn 1976; McFarlane and Mourad 2012). This identification of copper tools enables us to compare the contents of the female burials mentioned above.

Analysis of the axe blades in the British Museum catalogue of ancient Egyptian axes (Davies 1987) demonstrated that, without notion of the chemical composition, it is sometimes impossible to discern model tools from full-size tools. The size of some models is comparable to the full-size tools, but their intended use might be revealed by the difference in alloy. The artefacts big enough to be used as full-size tools have to be identified as models only tentatively (as in the context BE 2 on Fig. 4.7).

In the New Kingdom, the tools became part of the Mouth-Opening ritual, while during the Old Kingdom only adzes were used for it (Roth 1993a, 74–77). However, this addition appeared in the Pyramid Texts only in the 6th dynasty.

Cosmetic and sewing tools

Cosmetic tools (mostly mirrors and razors) were omitted in Old Kingdom offering lists and not often included in burial equipment. Although modern archaeologists tend to group artefacts made of the same material into one etic category, ancient Egyptians' emic categories might have been defined in other ways. Models of razors and mirrors are very rare, as Old Kingdom Egyptians used real mirrors and razor blades in their burial equipment. Other objects appeared occasionally, such as tweezers or the earliest preserved part of a hair curler (Fig. 4.5). Cosmetic spatulas were tear-shaped objects without a blade and probably served as later kohl-sticks (Figs 4.7, 4.8: I; Vandier d'Abbadie 1972, 155–161). A rounded form of kohl-stick appeared in the 6th dynasty at Edfu (Vandier d'Abbadie 1972, 160, no. 715).

Razors were used for shaving body hair of both men and women in Old Kingdom society and had the distinct shape of a handle with a blade (Montet 1933). Razors with semi-circular blades appeared in burial equipment both in the form of models and actual tools. Flat rectangular artefacts with trapezoid section have been interpreted as razor blades as well.

Examples of sewing tools, such as needles (Vogelsang-Eastwood 1995, 35–36), were an optional part of tool-sets, and they appear throughout the Old Kingdom in several burials. It is impossible to discern the intended model needles from the real size needles without an analysis of the chemical composition of artefacts.

Model tools in the archaeological contexts

No single rule exists for the selection of the assemblage contents and individual variations occur. Four essential tool types included axes, adzes, chisels, and saws, but their number varied (Fig. 4.5).

The burial equipment of Hetepheres contained life size chisels and saws. The burials of the unknown princess and princess Khekeretnebty's are roughly comparable in their contents and in the number of model tools. Only a few models were placed in the burial equipment of the wife of the official Nefer-ihy, who was positioned on a lower social level than Khekeretnebty, and was buried roughly in the same period.

Cosmetic tools were apparently lacking in the assemblages dating to the 4th and 5th dynasties (Fig. 4.6). One exception is royal burial equipment. Queen Hetepheres was buried with a substantial number of golden and copper razors, one golden cosmetic spatula, and one copper needle. On the other hand, the burial of the unnamed and supposed princess from Giza from the late 4th dynasty contained no cosmetic tools. The wife of the official Nefer-ihy had one model razor and one spatula. Thus, cosmetic tools were a possible but not a regular part of burial assemblages until the 6th dynasty.

A change during the 6th dynasty

As suggested by Lilyquist (1979), mirrors began to appear in the 6th dynasty burial assemblages of men and women. This change might have been a reflection of the broader patterns in burial customs of the eastern Mediterranean (Philip 2006, 161). The practice shifted from the rather abstract copper model tools to implements used for personal hygiene (reversing the process described by Meskell 1999a). The female burials of the 6th century that have survived undisturbed generally contained no copper model tools, with a few exceptions (perhaps preserving the older custom, which continued in some high status contexts even during the Middle Kingdom: Grajetzki 2014). One exception is the burial assemblage of the so-called western queen at Saqqara (Table 4.1: 13). Another burial excavated in Giza (Table 4.1: 14), with a rather 'transitional' assemblage, contained copper model tools and a possible model mirror (which is at the Kunsthistorisches

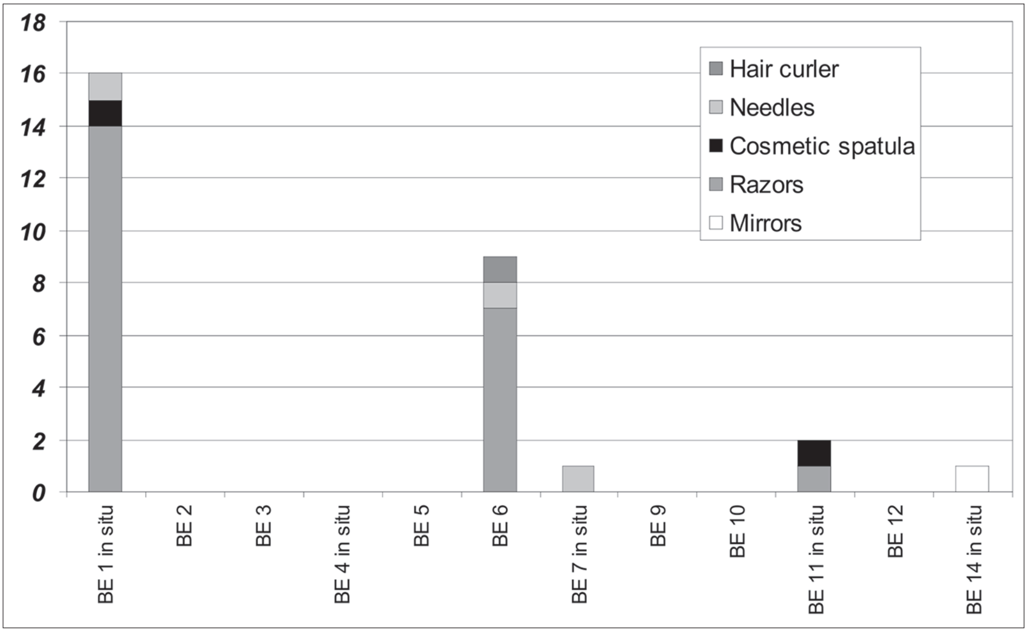


Figure 4.6. Cosmetic tools found together with Old Kingdom female burials with copper tools and copper model tools.

Museum of Vienna, but could not be securely identified). A further burial in Giza, shaft 688 (Junker 1947, 153, Abb. 75), supposedly of a woman and undisturbed, contained a full-size mirror, confirming that the model tools were omitted from burials in the late 6th dynasty. Another difference between mirrors and model tools was that the mirror discs provided a surface for inscribing the titles and the name of the owner, while model tools were often uninscribed.

The change in burial equipment also appeared in the Memphite necropolis as well as in provincial cemeteries. A different practice seems to have appeared at Edfu, Mastaba IX, where the deceased of the northern chamber was equipped with a metal washing set, a mirror, and model tools. The southern chamber, which supposedly belonged to the wife of the tomb owner, contained only a metal mirror and a washing set (Alliot 1933, 36–38, figs 81–82, pl. XXXV). Alliot, as well as Seidlmayer (1990, 59), assigned a late 5th dynasty date to this tomb, yet the mirrors in the tomb equipment might rather be indicative of the 6th dynasty.

The burial chamber of tomb BE 7 at el-Kab, also from the 6th dynasty, contained a copper washing set, while the burial chamber of the Hathor priestess Iretnakht contained a mirror with an inscription identifying her (Limme 2008, 21–22, figs 22–25). This type of inscription on mirrors allow us to identify more female burials, *e.g.* at Hu (Lilyquist 1979, 12; Petrie 1901, 38, pl. XXXI) and at Zawiyet el-Mayitin (Piacentini 1993, 68; Vandier d'Abbadie 1972, 177, fig. 780). Other examples can be found at Balat: the tomb of Ima-Pepy, the burial of Igit (a supposed spouse of the governor), the burial of an eight-year-old girl named Idut, who was already designated with the titles 'priestess of Hathor' and 'king's acquaintance' (Valloggia 1998, 146–147), and the women from the tomb of Khentika (Castel *et al.* 2001, 196–198).

Earlier excavators assumed that the burial belonged to a woman whenever a mirror was included in the equipment, however this is not quite the case (for New Kingdom see Meskell 1999b, 192). Mirrors, together with model tools, were part of men's burial equipment as well, *e.g.* at Balat in the Tomb of the governor Medunefer (Valloggia 1986). If two chambers are preserved and the lesser one also contains a mirror, the identification of a female burial is possible (as in the case of tomb AS 65 at Abusir South, Dulíková *et al.* 2011).

Copper tools in female burials

Administrative control of copper

Iconographic evidence shows that the amount of metal ore and end products was controlled by the administration during the Old Kingdom (Eyre 1987, 13). One possible example of the weighing of copper (model) adze blades was found on a block fragment from the tomb of Kaemrehu at Giza, now in Copenhagen (Altenmüller 1986; Mogensen 1930, fig. 42). The copper blades were piled on one bowl of the scales, showing the weighing of several artefacts at once. Old Kingdom weighing stones bore the names of kings and officials, indicating that the control of the metal amount was decentralised to officials responsible for the control of the craftsmen. Two names preserved on weighing stones could be interpreted as feminine, but the evidence is not decisive enough to confirm any participation of female officials in the weighing (Cour-Marty 1997, weighing stones nos. 13, 16).

Models were certainly cheaper due to the amount of metal used, as pointed out by Grajetzki (2003, 19) and Swain (1995, 36). However, model tools were repeatedly hammered and annealed into their shape (Maddin *et al.* 1984) using the same *chaîne opératoire* as for the real tools, though on a smaller scale. The creation of the model tools was a time-consuming activity. This effort might have been increased by the production of wooden model handles, though they were often omitted (*e.g.* in the assemblage of Neferhathor, only the chisels once had wooden model handles). This omission indicates that the most important part of the tool was the copper blade.

Another variable feature might have been the gilding of the copper model tools (or even golden artefacts, as in the royal assemblage of Hetepheres), creating another status difference among assemblages. Gilding was preserved on the models from the tomb of the vizier Ankhmahor at Saqqara (Kanawati and Hassan 1997, 34–35, 72, pl. 40). However, this practice is not preserved very often, and the copper model tools from disturbed contexts might have been stripped of their golden foil. Fragments of foil remained in some contexts, *e.g.* in the pyramid Lepsius 24 (Table 4.1: 6; and gilded copper vessels with find nos. 53/J/94 and 67/J/94). A gilded *nms.t* vase was found in the pyramid of the Western Queen at Saqqara (Table 4.1: 13).

Model tools in female burials

Some of the expected differences among the burials of diverse statuses concern the form and quantity of burial goods (Binford 1971, 21) visible in Old Kingdom archaeology as well (Roth 1995, 50). The original weights of the model tools are impossible to measure because they changed over time. Differences can be found, however, in other metric properties of the artefacts, *e.g.* by comparing the size of models and tools. This is apparent for the 4th dynasty assemblages, where adze blades belonging to a queen were bigger than adze blades belonging to princesses

(Fig. 4.7). Nevertheless, this evidence is not sufficient to rule out the evolution of the shapes and their diminishing sizes throughout the 4th dynasty.

The size and some typological differences are also noticeable among the assemblages from the 5th and the 6th dynasty (Fig. 4.8). The burial equipment associated with nos. 5, 10 (early 5th dynasty), and 7 and 9 (reign of Djedkare Isesi) might be contemporary. Size differences could be observed in the case of axe blades, adze blades, chisels, and model razor blades. The morphological features of the artefacts are adjusted to the size of those models, *e.g.* the distance of each bulge on the cross-cut chisels. Specimens from undisturbed contexts show that the tool assemblages were standardized in size, with very little variation (Eerkens and Bettinger 1997; standardization of Old Kingdom artefacts was recently examined for pottery by Warden 2013). Some contexts also show size categorization in the models, probably reflecting the different sizes

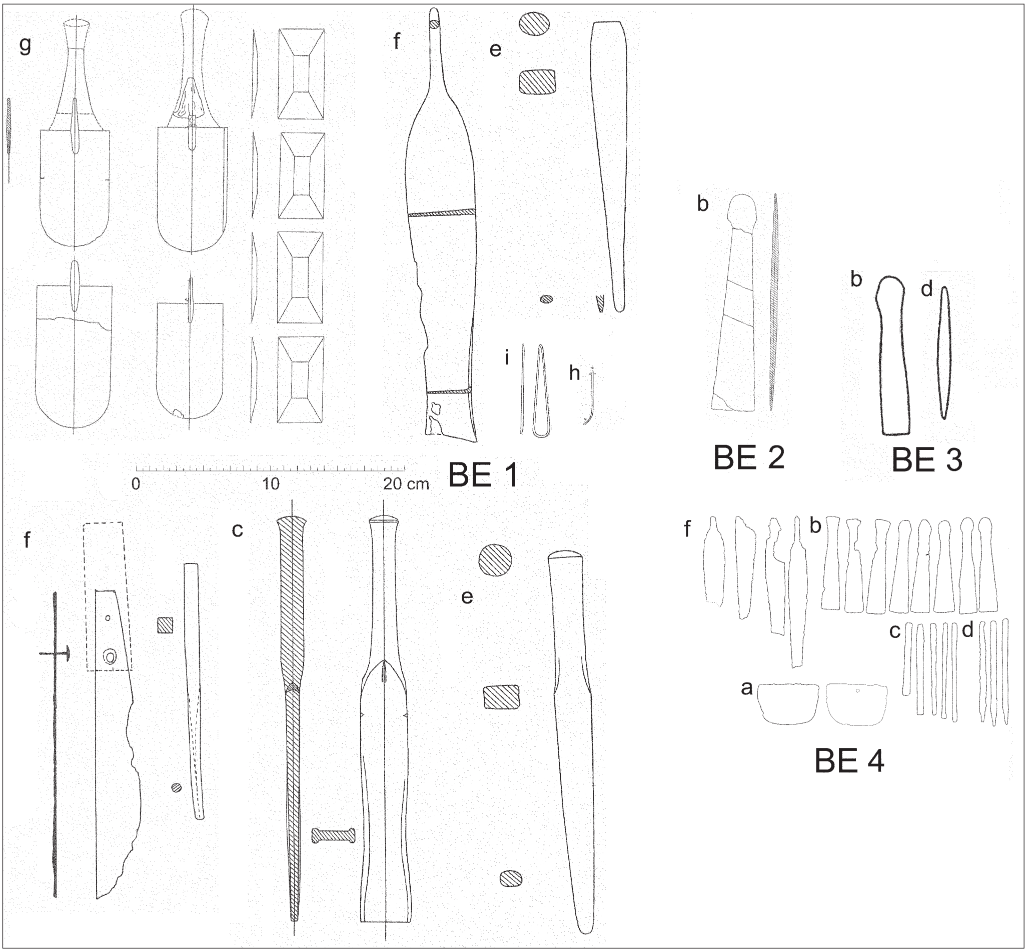
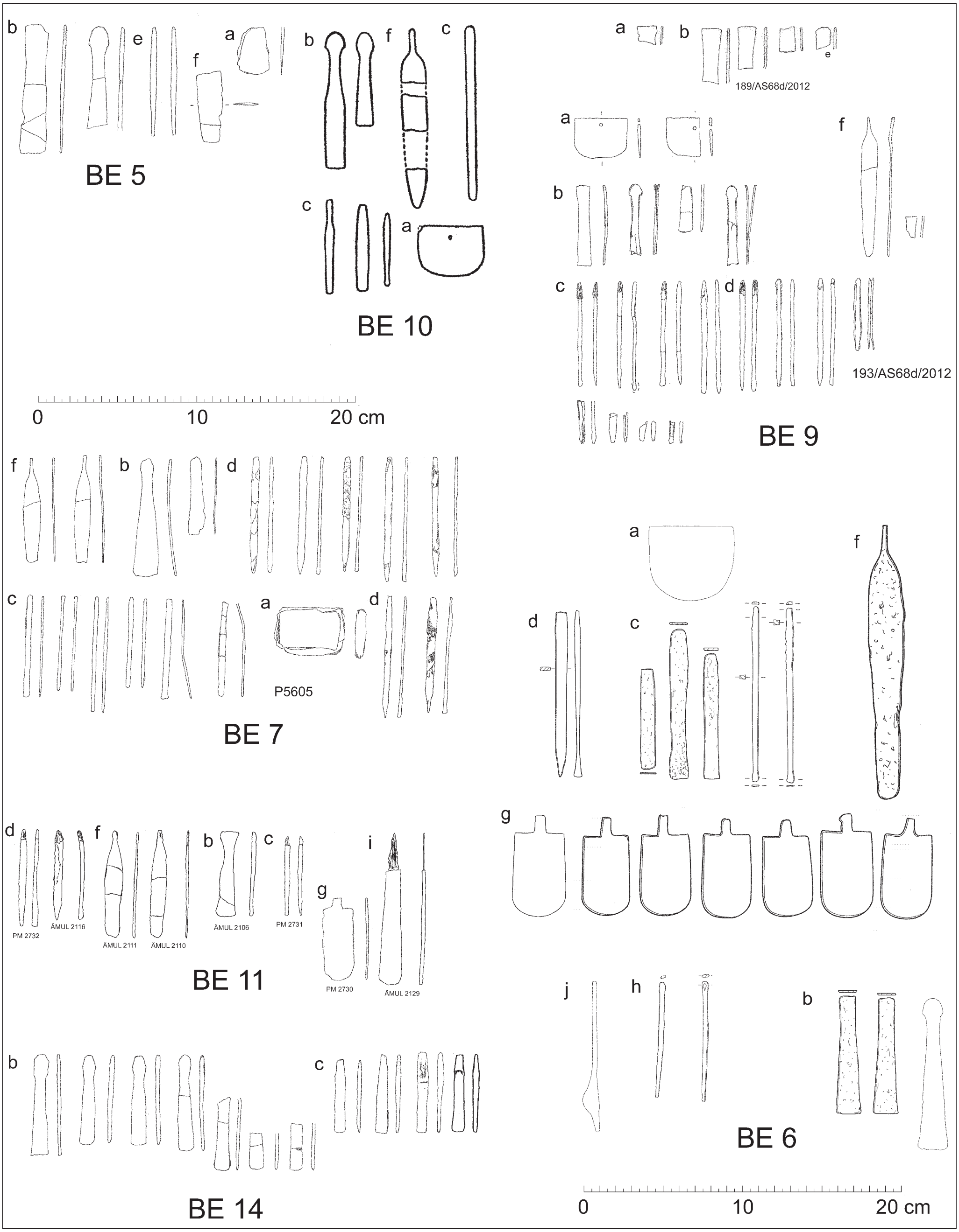


Figure 4.7. Tools and model tools from 4th dynasty archaeological contexts. Key: BE – burial equipment number in Table 4.1, a – axe blades, b – adze blades, c – flat chisels, d – cross-cut chisels, e – picks, f – saw blades, g – razors, h – needles, i – cosmetic spatula. The sources of the drawings are cited in Table 4.1. The drawings of contexts 1–3 were published with the kind permission of the Museum of Fine Arts, Boston.


b
e
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a
f
b
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d
193/AS68d/2012
BE 9
f
b
d
c
a
d
P5605
BE 7
a
f
d
c
g
d
f
b
c
i
PM 2732
ÄMUL 2116
ÄMUL 2111
ÄMUL 2110
ÄMUL 2106
PM 2731
g
PM 2730
ÄMUL 2129
BE 11
j
h
b
BE 6
b
c
BE 14
0
10
20 cm

Figure 4.8. Model tools from 5th and 6th dynasty archaeological contexts. Key: BE – burial equipment number in Table 4.1, a – axe blades, b – adze blades, c – flat chisels, d – cross-cut chisels, e – picks, f – saw blades, g – razors, h – needles, i – cosmetic spatula, j – part of a hair curler. The sources of the drawings are cited in Table 4.1. The drawings of context 10 were published with the kind permission of the Museum of Fine Arts, Boston.

of the tools in real life (Fig. 4.8: burial equipment 6, 10). Model handles or hafts were frequently excluded, but they appear for instance at Abusir and Giza (Fig. 4.8: 9, 11). A comparison of the size of the razors shows that Hetepheres had life-size razors in her burial equipment, whereas 5th dynasty razors were more often models with no apparent practical use. It is impossible to discern the variances related to any specific workshops or to determine different sources of the copper ore without the analyses of the chemical composition of the tools. However, variability appears already in the artefact morphology.

The interpretation – tools in the Old Kingdom female burials

Full-size tools were already present in Early Dynastic burial equipment of royal tombs, tombs of high officials, and subsidiary graves interpreted as graves of artisans (Davis 1983). Copper model tools continued as symbols of attached craft specialisation (Brumfiel and Earle 1987) since the Early Dynastic times, as a sign of the patron-craftsman relationship. The owner was a member of the elite, who could order craftwork from the craftsmen. Model tools and model tool blades were the symbols of either the most expensive or the most frequent part of the transaction. Written sources mentioning Old Kingdom transactions between patrons and craftsmen were collected by Wilson (1947, 238–243) and Müller-Wollermann (1985, 142–144). The documents also contain information about the economic activity of women. The administrative status of women in written sources was more visible during the Old Kingdom than in later periods, but this could be a result of differing source preservation (Bryan 1996, 39). Just like men, Old Kingdom women could order craftwork, either a small piece, such as a statue, a false door, or an offering basin, or larger works, such as tombs (Robins 1993, 164; Fischer 2000, 8–9). As members of the elite, women were provided with tools for their craftsmen in the afterlife, which indicated their ability to be benefactors of craftwork. The corpus is too small to confirm that the wives of men engaged in the organization of work were more likely to obtain a set of copper model tools in their burial equipment.

Size differences can be seen among the model tools, probably a result of the actual social status of the deceased. The differences might also be a result of the local availability of model tools. The copper model tools were provided either by the royal administration or by the private tomb-owner. However, this hypothesis must be the subject of further analysis (trace element and lead isotope analyses). The provision by the tomb owner himself is more probable, due to the existence of weighing stones with names of officials mentioned above. The occurrence of jewellery in burials, often made as copper core artefacts gilded by foil, might be an evidence of royal honorary gifts (Butterweck-AbdelRahim 2002, 4–34) with religious connotations, which might be even more substantial than its material value (Wilde 2013). The most important physical property of copper artefacts for Old Kingdom Egyptians, the weight, is no longer applicable due to the changes in the artefacts during their post-depositional history.

Conclusion

Copper model tools were included in Old Kingdom burial equipment of wealthy women. This custom has so far been confirmed for Old Kingdom female burials only at the Memphite necropolis. The latest addition to this corpus is an assemblage from the burial of Neferhathor at

Abusir South, Tomb AS 68, Shaft 2. It contains the models of common tools used by craftsmen: axes, adzes, chisels and saws. Copper tools were included in offering lists, though there were no rigid rules for their inclusion in burial equipment. They were symbols of attached craft specialization and the patron-craftsman relationship. They represented the most expensive element of the tool assemblages and they have often been found without model handles. Size differences among the copper model tools are visible, but the interpretation is unclear due to the lack of archaeo-metallurgic analyses of the artefacts.

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5

Mallets, Chisels, Sledges and Boats: the Art of Quarrying at Gebel el Silsila

John R. Ward

with contribution by Maria Nilsson

Introduction

Ancient Egyptian quarry techniques remain a highly debated topic (*e.g.* Bloxam 2010; Kelany *et al.*, 2009; Shaw *et al.*, 2010), and despite a few attempts of establishing a relative chronology based on chisel marks (Klemm and Klemm 2008; Harrell and Storemyr, forthcoming), more research and detailed studies are required before any conclusions of technological process (Nilsson and Ward, forthcoming) can be reached. The ongoing archaeological work at Gebel el Silsila provides an example for this research topic, and this paper presents some preliminary observations. Among the ancient sources, papyri and other historical texts provide us with opportunities to reconstruct the preparation involved in some of these engineering endeavors. Texts such as the Turin Papyrus (Harrell 2013b; Harrell and Brown 1992a, 1992b), describe the vast work forces that migrated from quarry to quarry along the established Nile valley trade routes. As such, one can imagine the massive infrastructure that would have been employed to transport such a huge workforce, to feed and water them, provide them shelter, and the necessary tools and equipment to perform their tasks. Similarly, one can envisage the huge rafts and other vessels of varying shapes and sizes that were employed to transport megalithic blocks of stone, columns and obelisks up and down the Nile. The result of the entire process is what can be seen today: architectural masterpieces with dressed polished surfaces that were believed to reflect the sunlight of Re. Although it is possible to reconstruct such a romantic visual from the evidence given by ancient sources, very little has been ascertained of the actual process.

The preparation process – the extraction and transportation of stone – is, therefore, the focus of this paper. It is hoped that the topics mentioned above can be explored through ancient Egypt's largest sandstone quarry – Gebel el Silsila (hereafter referred to as 'Silsila') – a previously relatively unexplored site that offers a corpus of archaeological material and offers insights into these topics.

Historical overview of the quarries of Gebel el Silsila

Since 2012 the Swedish run Gebel el Silsila Survey Project has set out to document all archaeological features on site, of which the ancient quarrying techniques and processes are but one important factor. Silsila is the largest remaining ancient sandstone-quarried landscape in Egypt today (Harrell 2013a; Kucharek 2012; Nilsson 2014; Nilsson *et al.*, forthcoming). Its topographical diversity provides us with a series of windows into the ancient quarrying techniques utilized throughout history and continues to present new information and material as the team explores the site, its preserved quarried surfaces, and mountainous landscape.

In spite of a very limited number of detailed studies, such as a smaller excavation of its Predynastic cemetery and the epigraphic surveys carried out by Legrain (1903a–d) followed by Caminos (Caminos 1952, 1955, 1977, 1987a, 1987b, 1992; Caminos and James 1963), the majority of archaeological remains at Silsila lay more or less unexplored until the current survey project began (Nilsson 2012, 2013, 2014; Nilsson *et al.*, forthcoming; Nilsson and Ward, forthcoming).

The preserved quarries of Silsila are as diverse as its history, ranging from exploratory surface extraction to subterranean galleries and enormous open faced quarries. Vertical quarry faces up to 40m high with square, horizontal platforms bear testimony of an extensive step-extraction where the stone blocks have been removed and later transported to various sites in Upper Egypt. In contrast to these vast, vertical, open-faced quarries lay the titanic galleries that have been excavated deep beneath the mountain using a considerably different technique, similar to that which was applied for limestone extraction (Clark and Engelbach 1990; Harrell 1992). Remembering that the very fabric of the temples and shrines of Upper Egypt were constructed from the stone that once made up the mountain of Silsila, it is not surprising that one feels the subtle similarities between them. It is important to remember also the religious aspects and connotation of Silsila and its stone in order prevent oneself from viewing the site as merely a stone factory. Instead, it should be regarded as a sacred landscape in itself; a landscape which served as a temporary home to the thousands of workers, overseers, and priests who exploited the site for several millennia.

The oldest extraction that took place on site has been verified by the archaeological material (pottery, quarrying technique, epigraphic material, *etc.*) observed and recorded on site, and which belongs to the Middle Kingdom (Nilsson 2013; Nilsson and Ward, forthcoming). Middle Kingdom quarrying at Silsila displays considerable technical differences from later periods. First and foremost one can distinguish a wide/broad tool (chisel), which was applied to the stone in a nearly horizontal work-orientation (very similar to how a carpenter prepares a groove in a length of wood) (Nilsson and Ward, forthcoming; see Klemm and Klemm 2008, 196 with fig. 302 for a somewhat different suggestion for Middle Kingdom tool marks). The grooves created by each tool strike are rather short and the preserved extraction trenches (which were excavated around the block in order to remove it) are a cubit (52.5 cm) wide, which indicate a short tool and a large physical workspace. Based on the shorter tool, a large trench was required to allow space for the hand to wield the chisel as well as for the mallet to strike its head (Fig. 5.1). While the current team's documentation and analysis of discovered material continues, and may later indicate a different result, quarry expeditions are described in the textual material at Silsila from at least the 11th dynasty (Nilsson 2013; Nilsson and Ward, forthcoming). Unfortunately, well-preserved Middle Kingdom quarries within Silsila are a very limited find, which is naturally due to the fact that work continued during later periods.

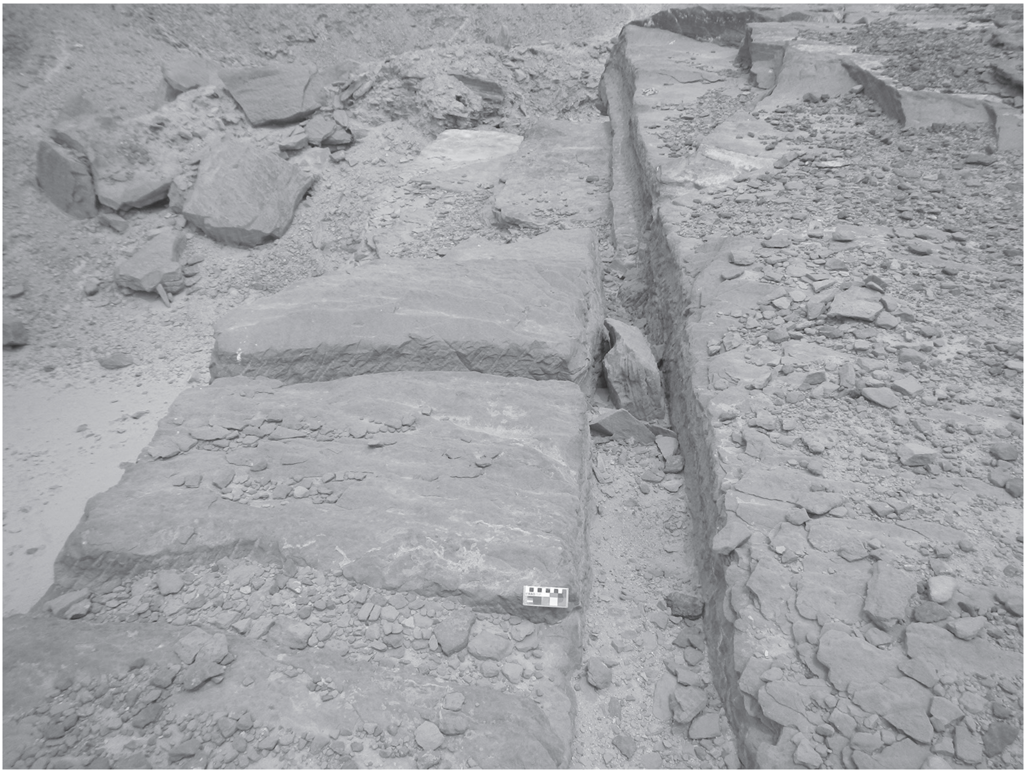

Figure 5.1. Detail example of large Middle Kingdom trenching. Scale 10 cm. © Gebel el Silsila Survey Project 2014.

Ceramic and epigraphic material reveal an increase in quarry activity during the New Kingdom (Kucharek 2012; Nilsson and Ward, forthcoming), when Amenhotep III and later Ramses II enlarged the capital with enormous and prolific building programs (Arnold 1991). Silsila, in fact, sees a dramatic rise in stone quarrying exploitation, due to this increase in building activity of temples in Upper Egypt and the change in fashion from limestone to sandstone (Klemm and Klemm 2008, 180–190). Preserved within the epigraphic material on site are inscriptions that testify to a series of expeditions to Silsila (*e.g.* Caminos 1952), stretching from the early 18th dynasty throughout the New Kingdom into the Late Period and eventually ending abruptly during the reign of Emperor Claudius (Nilsson *et al.*, forthcoming). Monumental quarries of the New Kingdom consist of 50 quarry faces or more each; enormous gaps in the mountain that at times stretch out approximately 350 m in width and over 35 m in height, and which bear witness to grand expeditions carried out by some of ancient Egypt's most renowned rulers and overseen by some of her more enigmatic viziers (Nilsson and Ward, forthcoming). Semi-circular gaps and rectangular trenches reveal the size of drums and blocks that now make up the architectural details of sun courts, hypostyle halls, pylons and gates within the grand Temples of Karnak, Ramesseum, Medinat Habu, Luxor and so on. Yet, even with all these preserved architectural details we are only now beginning to understand the logistics and processes used within the extraction processes.

Extraction

Trenching

The extraction techniques, including trenching styles, block sizes and active use of the stratified layers, changed with minor or sometimes major effect on the landscape. For instance (and only one example out of many at Silsila), a distinct technological alteration occurred during the reign of Amenhotep IV, when the overall block size was changed from larger to smaller blocks, known as *talatat* (Kramer 2009; Vergnieux 1999). Several smaller quarries, especially in the northern part of Silsila East, contain archaeological evidence of *talatat* extraction, indicated by prepared (trenched) but unextracted blocks, as well as gaps and footprints preserved after the block's removal (Fig. 5.2). As is commonly known among Egyptologists, the *talatat* block was used during the Amarna period for rapid and easier construction as each block measured 1 cubit × ½ cubit × ½ cubit (52.5 × 27 × 27 cm); an efficient size small enough to be carried by a single worker, and which could be stored and transported with less effort compared with the larger blocks that were known from previous generations.

One of the smaller quarries located on the east bank will be used in order to demonstrate general quarrying techniques that are characteristic for the New Kingdom. It is topographically labelled as Q33 (Fig. 5.3), but better known to the survey team as the 'Ramesside surface quarry' (Nilsson 2013). The physical nature of this particular quarry – its stratification and geological layout of the bedrock – has dictated the various extraction styles and blocks sizes during its development rather than the requirements of some architectural building project within Upper Egypt (which one would have thought would have been the case in most extraction processes).

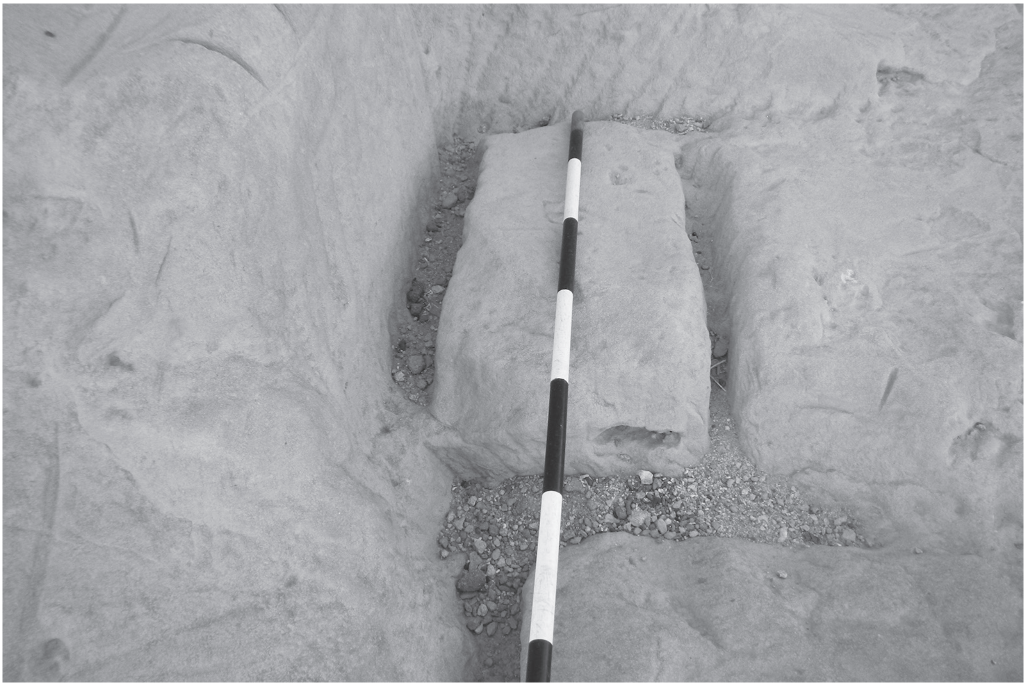

Figure 5.2. Detail example of talatat extraction. Scale 1 m. © Gebel el Silsila Survey Project 2014.

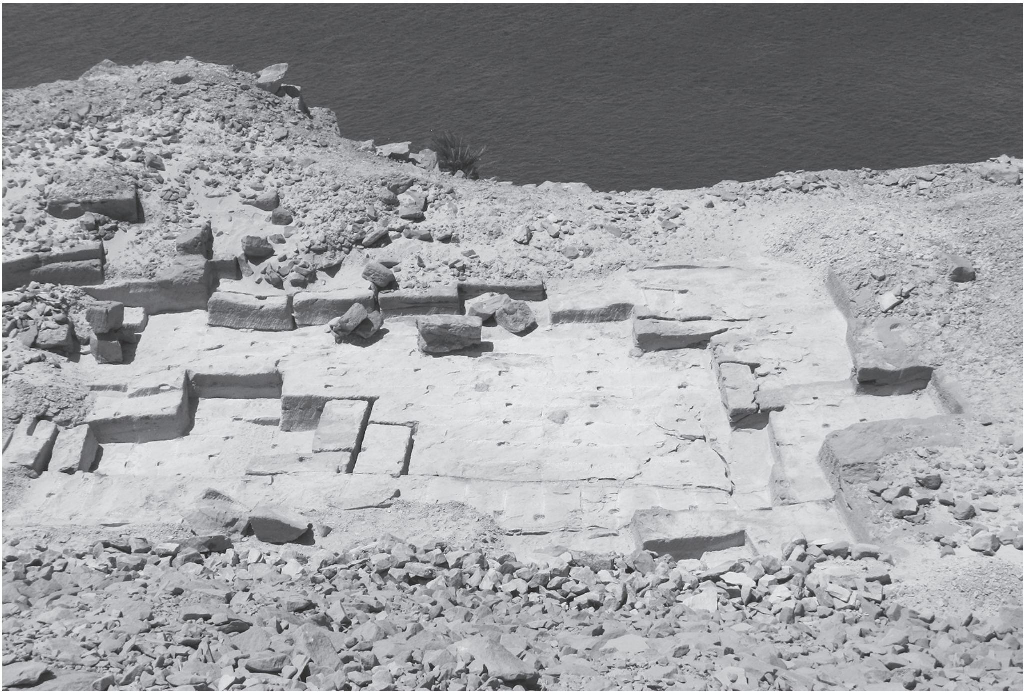

Figure 5.3. Overview of Q33 – the Ramesside surface quarry. © Gebel el Silsila Survey Project 2014.

The stratification aided the quarrying process and provided the quarrymen with natural, straight edges to at least one side of the required blocks. By using the natural strata, the workmen saved time and energy, and it allowed them a higher quantity of usable stone.

Starting from a block's exposed front (the front being the remains of the previous trench that facilitated the extraction of the previous block), a fist-sized trenching-process runs around all three sides of the desired block to an approximate depth of 75 cm (Fig. 5.4), which represents the depth of the required block in this instance (usually minus 5–10 cm that was required for the finer dressing of the block once removed). It should be pointed out here that the fist-sized trenching is indicative of most quarrying activity at Silsila from the New Kingdom onwards. This can be compared with the Middle Kingdom cubit trenching as mentioned above, and Old Kingdom extraction as noticed at Giza, for example (Clark and Englebach 1930; Harrell and Storemyr, forthcoming; Klemm and Klemm 2008, 194).

It could be ascertained from the preserved tool marks and preserved chipping of the internal waste that at least two, possibly three different chisels or tools had been utilized in the extraction process of this particular quarry. The first chisel stroke an upper trench to a depth of 26–29 cm, followed, possibly, by a second chisel that extended the trench by another 17–22 cm. The trench was lastly completed by means of a third tool generating a depth of 2–12 cm as it tapers into a v-shape at its terminus. The tool grooves of all three successive strokes had a consistent width of *c.* 8 mm, which equals the depth of the chisel head (not to be confused with the *width* of the same head, which in general measures *c.* 2.5–3 cm) (Nilsson 2013; Nilsson and Ward, forthcoming). Learning from this process, the sizes of the chisels can be assessed based on the

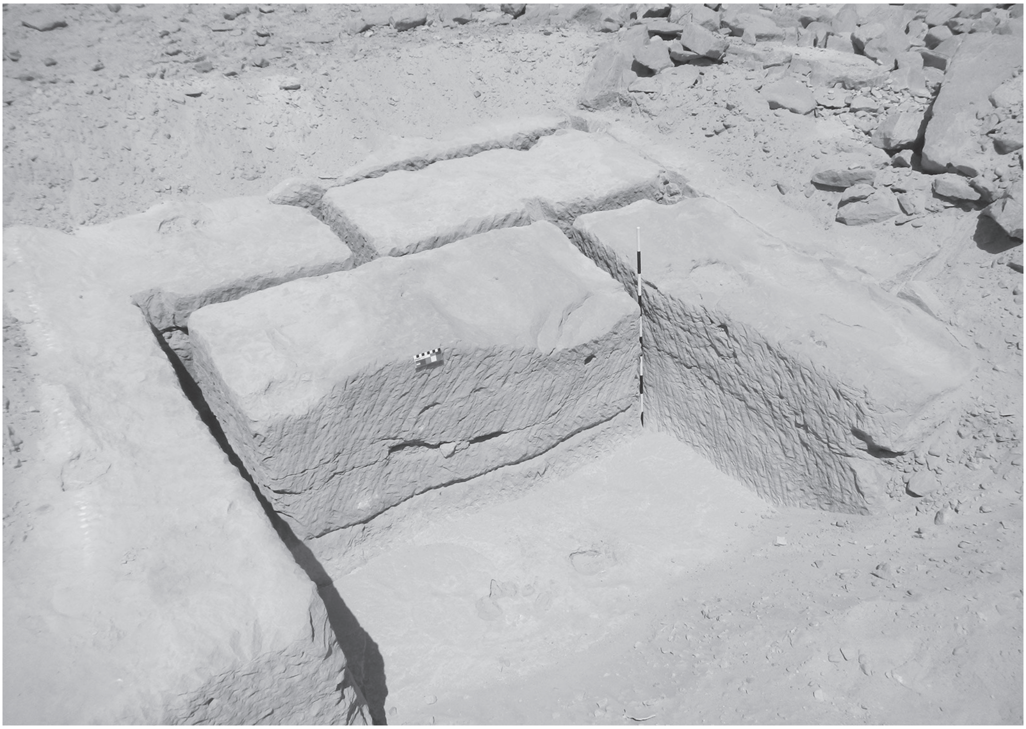

Figure 5.4. Detail example of trenching around a prepared block in Q33. Scales 10 cm and 1 m. © Gebel el Silsila Survey Project 2014.

length of the individual strikes shaped by the three different chisels, but one also has to add length for the hand to grip the chisel physically, and the head of the chisel which was struck by a wielding mallet. With a very limited number of physically preserved chisels from this period, it is difficult to either confirm or argue the various sizes that could have been available. Nevertheless, bearing in mind the details listed above, especially the length of the groove created by a sequential strike to the tool prior to altering grip and position, one may argue for a standard chisel of a cubit size (52.5 cm) or more (see Clark and Engelbach 1990, fig. 263). The discussion surrounding trenching techniques and amount of chisels employed during the extraction of one single block naturally include various additional facets, such as the hardness or softness of the sandstone, the availability of raw materials for the manufacture of the chisels, the physicality of the mason himself, the process of cleaning and extracting the waste material produced by the trenching as an ongoing procedure, *etc.* It should be noted that the study of trenching technique and the tools used continues as the team explores more quarries in detail.

Fracturing

Following the initial trench extraction, a series of horizontally placed 'pecking holes' were driven with a chisel into the base of the block at its front to a depth of 1.5–2 cm (Nilsson and Ward, forthcoming). The significance of these holes was to create a series of fractures to the 'belly' (base) of the block, thereby separating the desired block from its bedrock foundation. These pecking holes were normally placed some 10 cm above the bedrock in order to allow space for the fracture downwards. An oval lever hole of *c.* 10–15 cm was then chiselled out centrally to the underneath of the block to aid the separation of the desired block from its base.

During the Graeco-Roman period this levering process was replaced by wedges that were driven into the bedrock with the same intent of fracturing the block from its base and sometimes sides (see Klemm and Klemm 2008, 189 fig. 286). However, a major difference between the levering and wedge systems was the amount of footprints that were left after extraction; while one central lever mark was used during the New Kingdom, several wedge marks were applied to extract a block during later periods. Naturally, the footprints (including pecking holes, trenching, lever marks and wedge marks) remained visible on both the extracted surface (Fig. 5.5) as well as the block itself until further extraction and final dressing respectively.

Both levering and wedging had their own advantages and it is difficult to ascertain which one was more efficient. However, an important factor to take into consideration is the waste material as observed from the large spoil heaps that surround the quarries. The spoil from Roman quarries is habitually larger in its composition (thus more wasteful extraction) – a result of the more aggressive and forceful extraction techniques – compared with the material from the New Kingdom. The New Kingdom spoil is made up of a slightly smaller composite, which results from the more methodical approach to extraction in conjunction with the techniques employed, as demonstrated above.

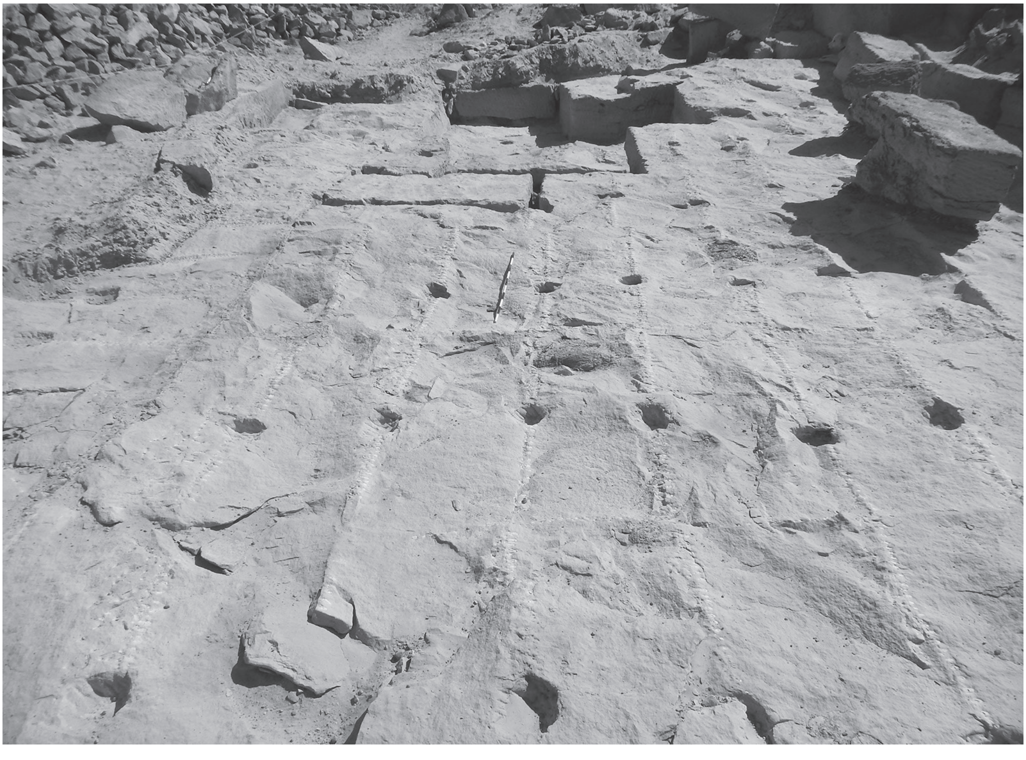

Figure 5.5. Overview image of footprints in Q33. © Gebel el Silsila Survey Project 2014.

Transportation

Lifting

The lifting and maneuvering of extracted blocks remains one of the more debated topics in ancient Egyptian masonry (*e.g.* Arnold 1991; Clark and Engelbach 1990). As it appears at Silsila, and if we remain within the Ramesside surface quarry, the remaining footprints of lever marks previously used for fracturing were possibly reused for the sake of lifting, and thus developed into post holes. The footprints/holes were located on an upper level of the quarried surface, close enough to the edge of the (next, below-lying) required block, and may therefore have functioned as anchor points for a basic cantilever lifting apparatus. In this manner the freed block could be lifted from its original position to that of its awaiting wooden sledge for further transportation as shown in the nearby commemorative stela of Ramses II (Martinez 2009; Nilsson and Ward 2013). Once the central block had been removed, it is hypothesised that the post holes were assimilated into the ongoing trenching process of preparing the next block, thereby maximizing the available hard stone and at the same time minimizing any wasted usable stone. Post holes and rope holes in the Graeco-Roman quarries testify to a similar lifting technique, which continued throughout the later stages of ancient quarrying at Silsila (Nilsson 2012; Nilsson and Ward, forthcoming).

Another possible method of lifting may have been by means of a team of workers having the block suspended from two poles carried on the workers' shoulders and the poles supporting ropes which tie and straddle the block from the underneath. However, while Silsila's epigraphic material confirms the use of sledges (stela of Ramses II; Martinez 2009; Nilsson and Ward 2013), further analysis is required if a suitable, general conclusion regarding transportation is to be reached.

A final observation is the presence of a block storage (Fig. 5.6) located above a Roman quarry (Q36) to the south-east of the Ramesside surface quarry. There, hundreds of extracted and 'stored' blocks lie on their (narrower) sides rather than on their base or upper side suggesting that the blocks were tipped over from a sledge.

Ramps

Various additional archaeological features indicate the different stages of a systematised and highly effective extraction processes at Silsila. In addition to the already mentioned footprints (lever/wedge marks, post holes, foot holes, rope holes, trenches and tool marks), one of the more informative examples is the ramp system (see Maxfield and Peacock 2001; Peacock and Maxfield 1997). The height of the ramp provides an estimation of approximate extraction height at the time when the quarry was abandoned or work was halted and the composition of the ramps offers material usable for dating (see Maxfield and Peacock 2001; Peacock and Maxfield 1997). Their width and sometimes tier system of construction can inform us of the work force, the process in which the structure evolved, and how busy the traffic was leading up and down from a quarry face in a single or two-way traffic system. The width can further inform us of block size or even architectural components being brought down from the associated quarry face. For example, the Main Quarry includes ramps used for the transportation of obelisks which is indicated by the physical remains of a fractured unfinished obelisk, as well as several depictions of obelisks on the quarry faces in this area. Furthermore, a technical sketch in the Main Quarry shows the extraction and lowering of an obelisk by means of ropes attached to rope holes (Nilsson 2014, 139 fig. 10.19).

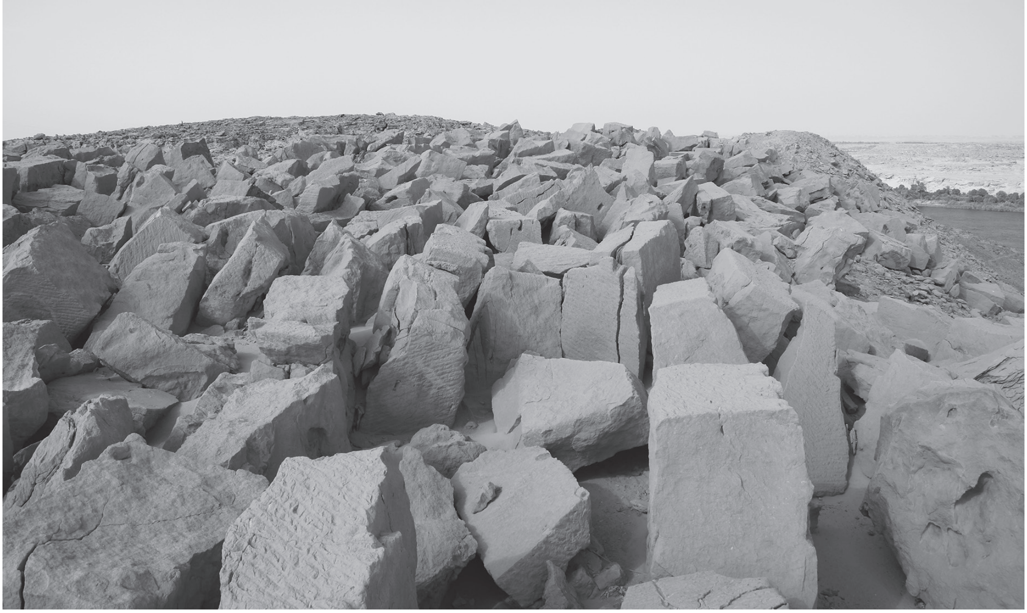

Figure 5.6. Overview image of the block storage above Q36. © Gebel el Silsila Survey Project 2014.

The ramps at Silsila had various, sometimes coexistent functions, but all were constructed from spoil, debris or chippings for the sake of some form of transportation. Tier-built ramps, for example, provided an elevated platform to an active quarry face, used for transporting extracted blocks from the high quarry faces to the ground level. Alternatively, flat and evenly raised areas were constructed more as road systems, upon which the quarried blocks were transported along the level ground.

The material making up this type of ramp is of much higher density compared with the tier ramps, which are usually built from larger stone fragments (fractured or unusable blocks of an inferior quality). Additionally, there are ramps that connect older corridors with newly quarried areas. These ramps may have functioned as mere pathways and, thus, did not require the dense core material to carry any heavy weight. There are also the ramp systems that climb and descend the spoil heaps and allowed for the systematic removal, transportation, and subsequent disposal of waste material. 'Ramp', therefore, is a general term attributed to any collection of spoil, debris, or chippings that served a direct function other than the enormous spoil heaps.

Transportation corridors

The individual quarries and associated work huts/shelters are connected via a series of pathways that cut through the mountain (Fig. 5.7). The corridors generally navigate directly from the quarry to designated quays along the Nile and are excellent examples of systematic quarrying activity. The corridors would have expanded depth-wise at the same rate or speed as its associated quarry and in line with the on-going extraction. The corridors generally descend in a slight angle towards the Nile, which would have facilitated the movement of the laden sledges to the awaiting

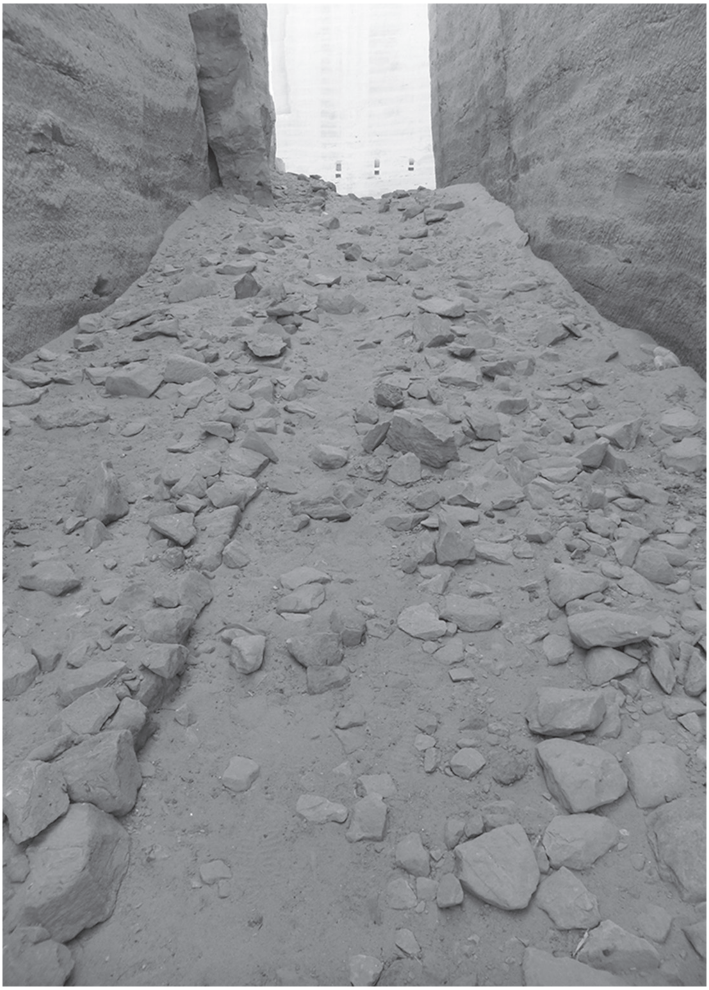

Figure 5.7. Example of a corridor in Q37. © Gebel el Silsila Survey Project 2014.

barges. The use of sledges or rope-maneuvered transportation is supported by the presence of larger rope holes and niches that may have held a pulley device to ease the progress of sledges to and from the quays (Fig. 5.7). Based on their width – habitually 3.5–5 m – the corridors would only allow for a single lane of traffic. With further research required and clearing of one of the corridors to the Main Quarry being planned, the team hopes to answer several outstanding technical questions in the near future.

Sledges

Although there has been little archaeological evidence discovered in or around the ancient quarries of Egypt thus far, it is generally accepted that the extracted stone blocks were transported to their awaiting barges by means of wooden sledges (Clark and Englebach 1990). However, depictions of sledges have been found in the epigraphic record, both as individual pictorial graffiti and as included in the quarrying scene of the official stela of Ramses II as mentioned above (Martinez 2009; Nilsson and Ward, forthcoming). The sledge depicted on the official stela is shown as being pulled by a team of workers, which contradicts other suggestions supporting oxen or bovid (Arnold 1991, 64–65). In addition to this depiction, the use of animal force is questioned by the limited size of pathways, corridors and surrounding quarry areas. Until alternative theories can be supported by archaeological material at Silsila, sledges therefore remain the more likely object used for transportation.

Temporary road surfaces

Since the project began in 2012, the survey team has carried out a small number of non-invasive archaeological experiments with regards to transportation possibilities and the temporary road surfaces that may have been employed to facilitate the removal and progress of the wooden sledge. One such experiment concerned the use of Nile grass; its abundance, accessibility to it, and its status as a renewable and sustainable source of material are indicators that it may have provided an excellent road surface. For the experiment, Nile grass was collected from the Nile embankments and bundled in sheaves, then laid on the existing rocky surface of a Roman quarry corridor, and later along an 18th dynasty transportation road consisting of quarry spoil and other debris accumulated over the last millennia. The bundles were packed tightly and laid across the pathways. With a regulated irrigation – such as seen in the famous scene in the tomb of Rekhmire that shows the transportation of a seated colossus (Davies 1943, pl. LX; Stocks 2003, 80) – the grass would become slippery, thus acting as a natural lubricated mat upon which a sledge could be dragged. This grass-covered surface was then trampled upon by the team over a period of several days and left there between two field seasons. The results so far suggest that the temporary surface could survive the harsh conditions, although a daily maintenance would be required to retain its slippery surface. Other alternatives considered for surface material include sand, pebbles and wood as suggested to have been favoured in hard stone quarries (*e.g.* Arnold 1991, 57; Kelany *et al.* 2009).

Boats

Another topic of study among the survey team deals with the rafts or barges used to transport the quarried stone. The stela of Ramses II, as mentioned above, provides us with three fine examples of non-sailed, floating barges, heavily laden with stacked stone (Martinez 2009; Nilsson and Ward, forthcoming). Unfortunately, the relief scene does not provide a clear picture of the entire process: questions that remain unanswered include the process by which the barges arrived at Silsila, during what time and season of the year, and of course how many workmen were involved and their social standing. Were the shippers merely involved in the shipment *per se*, or were they part of the overall management of the quarrying procedure? Currently, these are questions that remain unanswered.

Returning to the material at hand, Silsila contains a series of illustrations (official reliefs and graffiti) of various waterborne craft. Traditionally, boat graffiti are interpreted as correlating with the Osirian mythology, pilgrimage or other symbolic aspects of the afterlife and its associated journeys (Ward 2004). In contrast, boat depictions at Silsila are more likely to pertain to the more practical aspect as a means of transportation. In supporting such an aspect, we can return to the Ramesside quarries (including Q31 and Q32, and the associated quay, located immediately eastwards and westwards respectively of the surface quarry mentioned above). There the team has documented a series of boat illustrations of varying form and size. Two non-sailed vessels are depicted on the western side of the quay (thus seen by sailors and visitors from the Nile) and another seven barges were discovered incised into a vertical cliff face within the quarry itself. Between the quay and the quarries one finds another boat graffito below the two commemorative stelae of Seti I (Brand 2000; Klemm and Klemm 2008, 195 fig. 301; Nilsson 2013), which, together with the three depictions represented on the adjacent official stela of Ramses II makes a total of 13 barges. The only vessel that stands out is the Seti graffito, which includes a mast. The practical and symbolic significance is evident and there is a clear stylistic correlation between the style and technical execution of the barges incised into the quay and quarry, but the significance of their overall placement, combined with the question of whether all 13 boats are indeed associated, remain obscure and requires further investigation.

With regard to the more practical side of transportation, the nature of the Nile at Silsila must be considered as one of the more important issues when discussing transportation by river craft. Over the several millennia the Nile has forced its way through the Silsilian bedrock and has developed a bottlenecked formation, resulting in the narrowest Nile passage in Egypt. Recent studies and observations made by the current survey team, combined with previous scholarly assumptions (Klemm and Klemm 2008, 180), suggest that the site once took the form of a cataract, which would have hampered access by floating means during the low-water season. In fact, during the 2013 winter season the team could observe a land-bridge towards the southern end of the Silsila formation, which stretches from the east bank towards the west and which was completely submerged during the rest of the year. This land-bridge offers geological support to a local folklore that speaks of a possibility to walk across the Nile from one bank to another and adds credence to the possibility of a cataract at Silsila. In contrast, and due to its bottlenecked formation, the passage would have been flooded and hit by a strong current restricting navigation also during the inundation, possibly isolating Silsila from any outside supplies or assistance. Over the coming seasons, a comprehensive geological survey will be carried out which will hopefully answer how and when block transportation took place on the Nile at Silsila.

Summary and working conclusions

This paper set out to present a series of brief observations, recordings and theories concerning stone extraction at Silsila, including topics such as the trenching, fracturing, lifting and transportation employed on site from the Middle Kingdom to the Graeco-Roman period. The study of tool marks, trenches, and other footmarks has proven important and informative in terms of establishing a relative chronology for the site, and can be used alongside recorded epigraphic and ceramic material.

The paper has further explored the topic of transportation and routes taken by the workmen of Silsila, as well as the manner in which they used the natural landscape to create corridors and access to the preferred stone. From ramps and pathways to corridors and quays, the team continues to record these important features of the Silsila landscape, each of which will hopefully provide us with further insights into the ongoing process of quarrying management.

The overall management of the infrastructure of Silsila appears to go hand in hand with contemporaneous developments regarding the technology of metallurgy and associated quarrying techniques, as well as the transportation of the extracted blocks across the somewhat difficult landscape to the established quay systems. The quays, with their once awaiting barges, have stimulated questions regarding time management and overall site management at Silsila. These questions directly relate to the workforce employed on site, including the high officials, viziers, masons, and architects as well as an accompanying army. The manner in which these workforces operated is still a matter of debate and require further research and detailed studies on site. Regardless of the discrepancy in numbers, any larger workforce would require an efficient and renewable transportation system in order to expedite the removal of quarried stone to its predestined location.

It is hoped that this paper has shed some light on the current discussions and observations presently being undertaken by the team. With further studies combined with the ongoing work of translating the enormous corpus of epigraphic material, the team hope to be able to present more concrete conclusions in the near future.

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6

Food Consumption During the First Century BCE at Thmuis

Sean Winter, Colleen Westmor and Courtney Bobik

Introduction

Tell Timai, comprising the remains of the Graeco-Roman city of Thmuis, is located in the eastern Nile Delta, southeast of Mansoura (Fig. 6.1). Thmuis was occupied from at least the fifth century BCE when it was mentioned by Herodotus (2.166) and may have lasted until the tenth century CE, when it was finally abandoned after a tax revolt (Littman and Silverstein 2007, 1). Thmuis overtook neighbouring Mendes in importance during the Ptolemaic Period, when it became the capital of the Mendesian Nome and flourished well into the Roman Period, becoming an Episcopal See in the third and fourth century CE. The tell is approximately 91 hectares in size, has a perimeter of 5.7km, and measures 18m at its highest point (Littman and

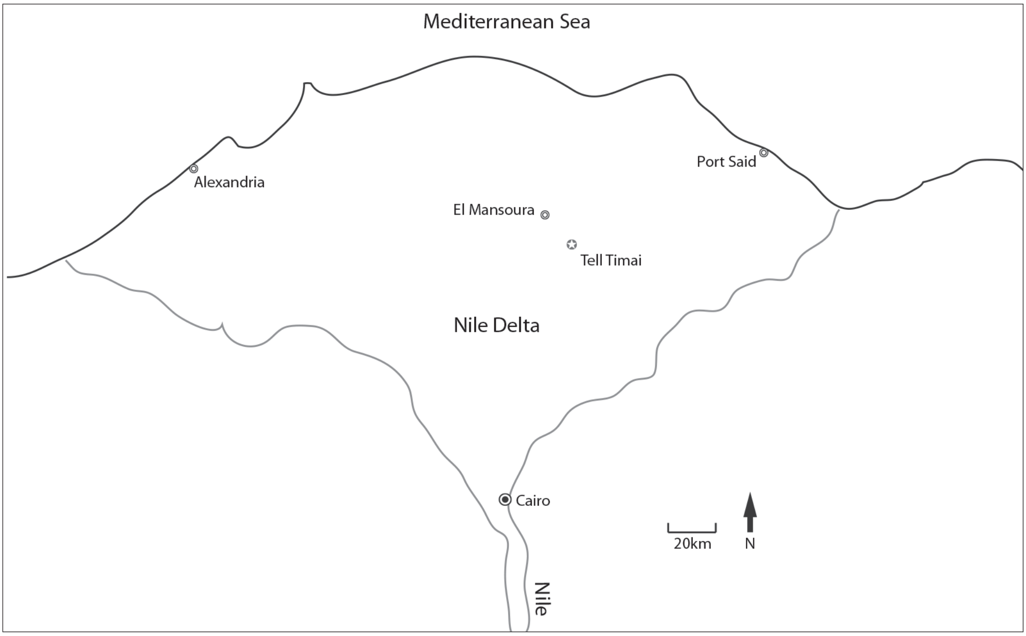


Figure 6.1. The Nile Delta showing the location of Tell Timai. © S. Winter.

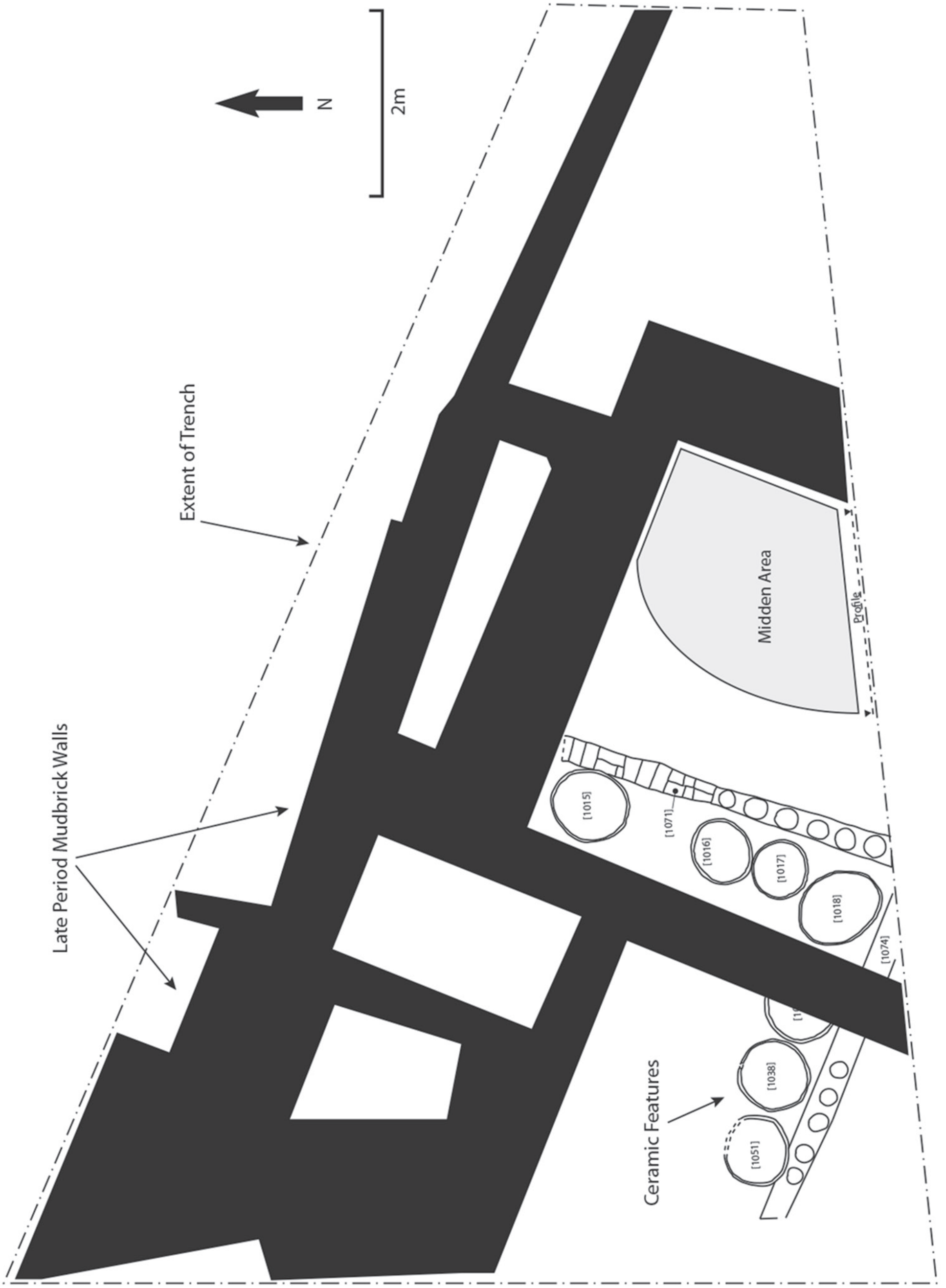
Silverstein 2007, 2). Thmuis was probably larger in antiquity. The tell was subject to significant Sebakheen activity in the late nineteenth and early twentieth century, and is currently being encroached upon by the modern expansion of the villages Timai el Amdid and Kafr el Amir Abdallah Ibn al Salam. Despite this, some mud-brick buildings still stand near the centre of the tell. The threat from modern development encouraged a team led by Robert Littman and Jay Silverstein from the University of Hawaii to commence archaeological investigations at Tell Timai in 2007, followed more recently by the work of the Supreme Council of Antiquities (SCA). Since 2007, archaeological work has produced significant results, including spatially and chronologically mapping surface remains, excavating a temple and a number of houses, and concentrating on salvage works, particularly in the north and the east, where modern encroachment is greatest.

This paper describes salvage work in Unit O7-15 conducted during the 2011 field season and the subsequent analysis of recovered assemblages during 2012. Unit O7-15, originally excavated by the SCA, was further investigated, to determine the nature of some intriguing uncovered archaeological features. Within this area, a collection of seven *in situ* circular ceramic features and a neighbouring midden were recorded. The ceramic features were interpreted as ovens, while the midden provided a sample of bone and shell remains, allowing for a closer examination of the diet of Thmuis people. Ceramic and numismatic evidence dates these features to the first century BCE, with perhaps some crossover into the first century CE. Given the lack of specific information within the literature on diet from the Nile Delta, the following archaeological data derived from excavations at Tell Timai provide important new insights.

Archaeological context

The *in situ* circular ovens and associated contexts are located on the northeastern side of the tell and were characterised as Unit O7-15 within the Tell Timai geographical system. The SCA excavations exposed a range of archaeological contexts, including a series of mud-brick walls, the ovens, and an associated rubbish midden (Fig. 6.2). The mud-brick walls overlay and post-date the ovens.

Unit O7-15 comprised a triangular area, approximately 10 m N–S by 15 m E–W. A total of 127 stratigraphic contexts were recorded. A limited excavation strategy was adopted, aiming to understand the construction and use of the seven circular ovens and other associated archaeological contexts. The open-area excavation strategy employed by the SCA left a single profile available for stratigraphic understanding of the various contexts. The profile, located on the south wall of the trench directly to the east of the ovens (Fig. 6.3), showed numerous tipping layers of burnt earth and midden material. These were interpreted as rubbish deposits associated with the original use of the ovens for food production and the later reuse for industrial purposes. A 2 × 1 m sondage was excavated into the midden, approximately 2m below ground surface, in order to recover a sample of artefactual material. The base of the midden was approximately 1.2 m below current ground level and overlays subsequent layers of mud-brick collapse and levelling material. All other exposed features within O7-15 were cleaned, drawn, photographed, and recorded. Targeted excavation was undertaken only where it would assist in understanding the already exposed features and their relationship to each other. Consequently, a number of the overlying mud-brick walls were removed.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Ceramic Features
[1038]
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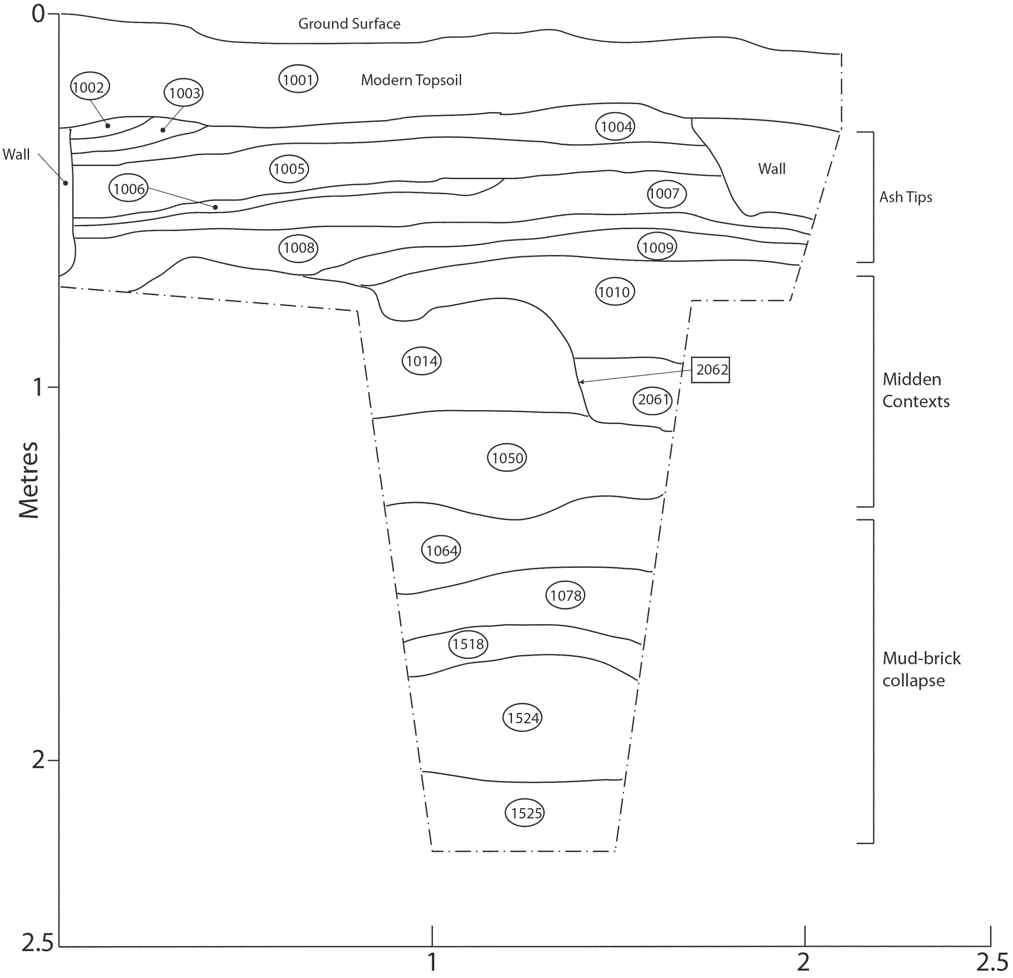
Figure 6.2. Plan of features within O7-15 with overlying mud-brick walls. © S. Winter.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Ground Surface
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Modern Topsoil
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Wall
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Wall
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Ash Tips
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2061
Midden Contexts
1
Metres
1050
1064
1078
1518
Mud-brick collapse
1524
2
1525
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2
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Figure 6.3. South profile of sondage in O7-15. © S. Winter.

The removal of these walls completely exposed the ceramic features and associated contexts. In total, seven circular (<1 m diameter) ovens were recorded arranged in an L-shape (Fig. 6.4). Each arm of the 'L' was around 5m long. Outside the 'L' there was a low mud-brick wall in which 11 amphorae were interred. Two of the ovens were half sectioned and two of the amphorae were removed from the wall for examination. Floor surfaces located on the inside of the 'L' were exposed and soil samples taken for analysis. The only walls interpreted as being contemporary with the ovens were two low mud-brick walls (1071 and 1074) constructed to support the 11 interred amphorae. No supporting walls were located in the area, suggesting that the ovens were open to the weather. However, a substantial posthole associated with a number of iron nails was located on the inside of the 'L' and this was interpreted as a roof support, suggesting that the area was probably covered, while not walled.

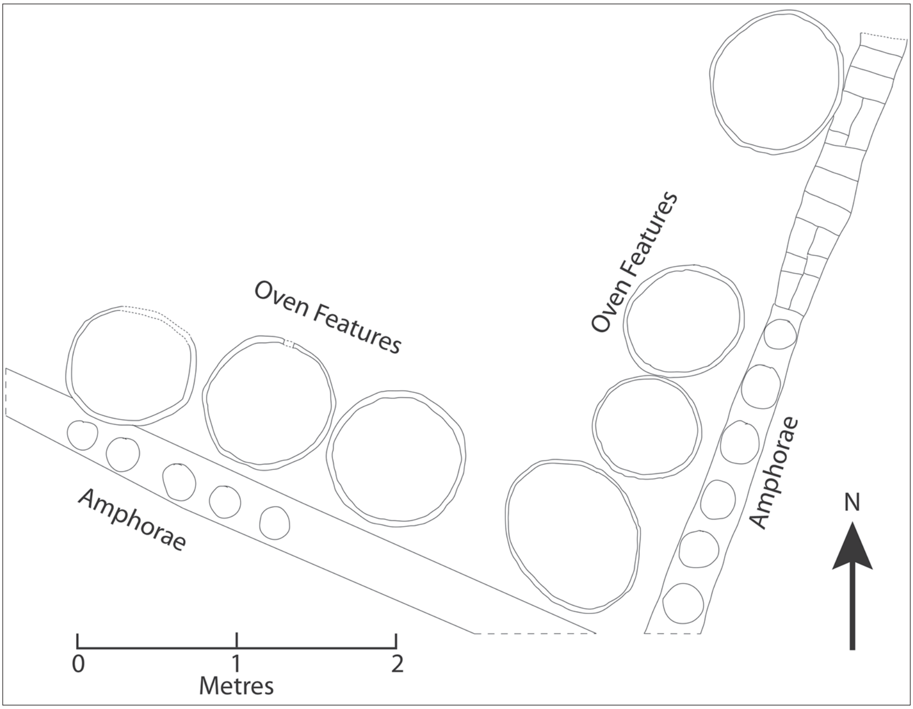

Figure 6.4. Plan of ceramic features. © S. Winter.

Artefact assemblages were recovered from both the midden and throughout area O7-15. Dating of the features and stratigraphic phasing for the unit was achieved through a large pottery sample from the sondage and from potsherds associated with *in situ* features. Ceramic evidence suggests that the exposed features fall within Phase IId of the Timai dating schema (as defined by Hudson 2012, 1), or to the first century BCE/early first century CE. Within this period, it was possible to determine three distinct sub-phases of the use of this part of the site. The earliest of these relates to the construction and initial use of the ovens for food production purposes. Following this, there is evidence of the reuse of three ovens for industrial purposes and the construction of a number of associated fired brick walls. The final sub-phase is characterised by the construction of mud-brick walls over the ovens, signalling the end of their use. This paper concentrates primarily on the first sub-phase, when the features appear to have been used for food production purposes.

Artefacts recovered in association with these features and interpreted as related to their use were low status items. Faunal remains, comprising animal bone and shell, were interpreted as waste from food produced within the complex. Ceramics were utilitarian and include 'vessels for the table, cooking, service, kitchen, and storage' (Hudson 2014, 22). A single large flat circular ceramic plate was recorded and interpreted as a fry-plate or similar, and two possible grinding stones were also recorded. Very few other ceramic items, such as figurines, were recovered. A number of coins were recovered and, though they conformed to late-Ptolemaic Period types, they were too worn to provide precise dating.

Ovens and associated features

The seven cylindrical ceramic features are interpreted as a series of ovens, based on their construction, form, and the evidence of prolonged burning within. The O7-15 ovens measure between 0.7 and 1 m in diameter, with unknown height. It is therefore unclear if they were open or closed at their tops. Remains of oven walls confirmed a vertical convex curve, suggesting they formed a dome or a conical shape. The ceramic walls were approximately 3–4 cm thick and appear to have been constructed as one solid piece. Though the heat from inside the ovens had baked some of the mud surrounding the exteriors, the fabric of the ovens is too even to have been fired in place, suggesting they were fabricated elsewhere and then installed. Each of the seven ovens was positioned in its own circular foundation trench. The prefabricated ceramic shells were placed within the trench and levelled upon fired brick and ceramic body sherds (Figs 6.5 and 6.6). Once set, a fill of mud was placed around the oven shell for insulation, with occasional ceramic sherds wedged in for stability. Several of the oven pits truncated those of neighbouring ovens, showing that they were installed one at a time and possibly over an extended period of time. The most northerly oven was the first installed, with additional ovens added south and then west following the 'L'. This suggests that ovens were added to increase production as needed. Fuel ash was recovered from the base of each excavated oven. The burning process would have created a large amount of ash, which would have required regular removal.

Along the southern and eastern edges of the ovens, two thin walls of mud bricks were laid in order to support 11 storage jars – five in the eastern half of the southern wall and six in the southern half of the western wall. The jars comprised reused amphorae, some of which were incomplete and missing their toes (Fig. 6.7). Without an intact base, it can be assumed these jars may not have been watertight. It is unknown whether the amphorae were intact during use or truncated prior to being interred in the mud-brick supporting walls. Pits were cut into the mud brick wall to allow the installation of the amphorae, which were stabilised with brick and ceramic

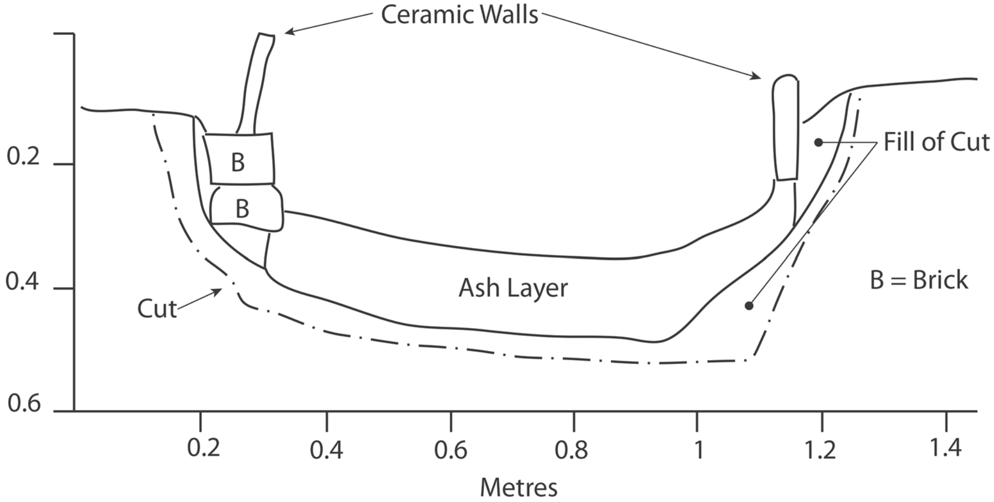

Figure 6.5. Cross section of oven feature. © S. Winter.

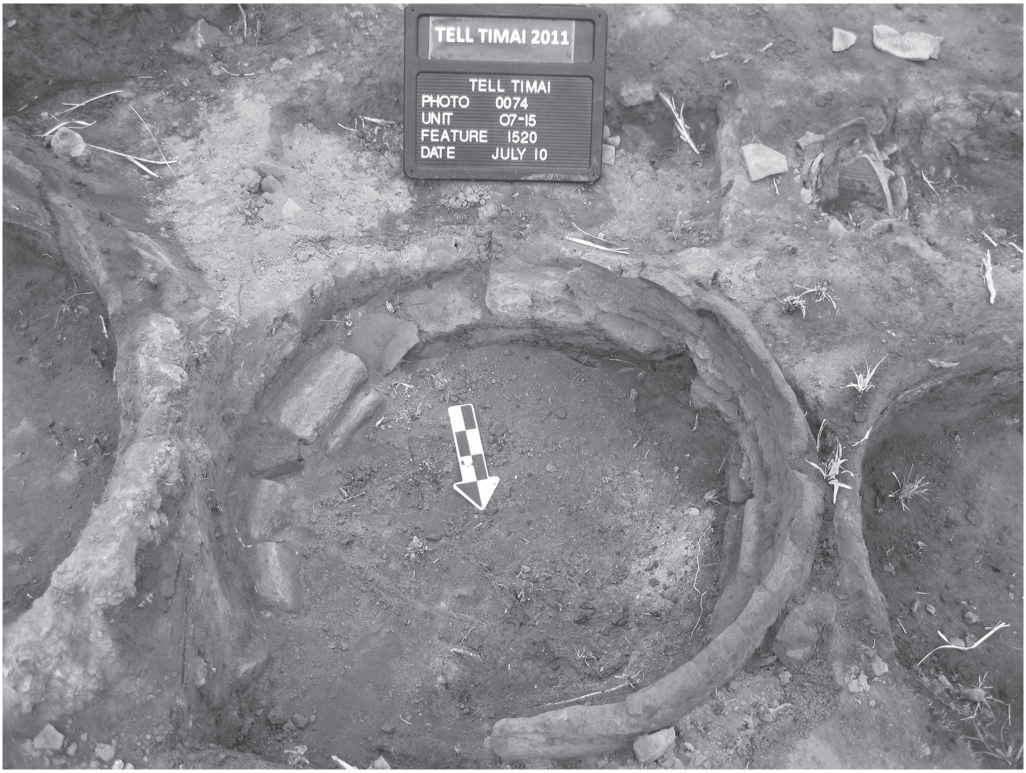
TELL TIMAI 2011
TELL TIMAI
PHOTO 0074
UNIT 07-15
FEATURE 1520
DATE JULY 10

Figure 6.6. Mid-excavation image of oven showing brick supports for ceramic oven shell. © S. Winter.

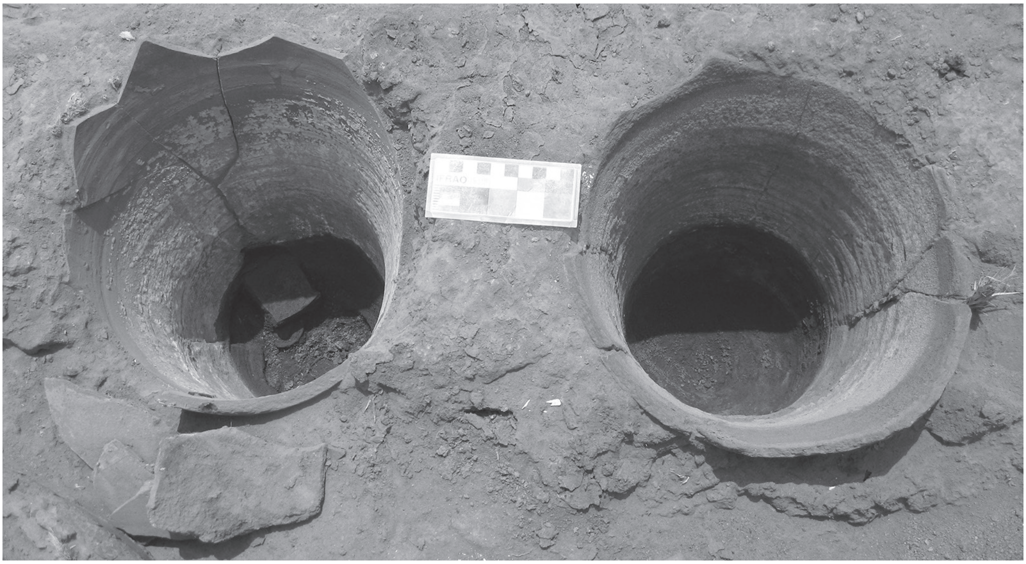

Figure 6.7. Amphorae interred within exterior wall. © S. Winter.

sherds. Access to these jars would have been from the south and the west, as the ovens abut the northern and eastern sides of the walls. This suggests that the overall working area of the complex extends beyond the excavated unit, while the function of the reused amphorae remains unknown.

The O7-15 ovens represent a local variant of ceramic cylinder and domed ovens known under various names including *tabun*, *tannour,* and *tandoor,* used throughout West and Central Asia and North Africa for at least 5000 years, first appearing in Egypt during the New Kingdom (Lyons and D'Andrea 2003, 521). Depictions from the tomb of Ramses III show this type of oven in use (Samuel 2000, 566). Ceramic domed ovens were excavated at the Amarna Workmen's Village, dating to 1350 BCE (Samuel 1999). Various types of this oven are still widely used throughout North Africa and West Asia today. *Tannour* variants have a range of forms, but generally comprise an open-topped cylindrical or domed ceramic oven, in which a fire is lit at the base and flatbread is baked on the internal walls of the oven. These are also used to cook meat and other food on skewers. Depraetere (2002) provides a typology of ovens used in Egypt during the Graeco-Roman Period. This typology provided a basic categorisation for bread ovens from the Ptolemaic Period throughout the eighth century CE. This typology was based on ovens described in published reports from 98 sites geographically restricted to the Fayum, Khargeh and Dakleh Oases, the western and eastern deserts, the Nile Valley, and Nubia. No ovens were included from Nile Delta sites. Depraetere (2002) sorted over 100 ovens into four different types based on their building techniques and materials. Of these four types, only type II and type III consist of a ceramic element, type I and type IV being made of mud-brick and plaster. Type III ovens, made with prefabricated ceramic vessels, have only been encountered at monastic sites. Type II ovens have been found throughout a large area of Egypt and have been dated from the second century BCE until the sixth century CE. Though type II ovens were generally made of clay coil technology and fired *in situ*, the ceramic element found at Shenhur appears to have been built and fired elsewhere before installation. It is this form that best matches the construction technique, size, and shape of the seven ovens found in O7-15.

Depraetere (2002, 123–125) further separates the type II ovens into three subcategories. Type IIa ovens are separated by mud-brick partition walls, while type IIb ovens are contained within a mud-brick bench. Type IIc ovens comprise only three ovens from Shenhur, where neither a partition wall nor a mud-brick bench was in use, leaving the ovens freestanding. It is within this third subcategory that the seven O7-15's ovens fit, being freestanding and pre-fabricated, similar to those found at Shenhur.

Midden

Although the full vertical extent of the midden is unknown due to the removal of top layers by the SCA prior to recording, the southern profile suggests that it was made up of layers of burnt earth, ash, and general rubbish. The original horizontal extent of the midden was not determined, as it was overlain by a series of later mud-brick walls. The composition of the midden and its close proximity to the oven complex suggest it was the result of rubbish dumping from continual oven use. The midden comprised successive layers of burnt earth and ash, interspersed with large amounts of ceramic sherds and food waste. Based on typological similarity and conjoins, Hudson (2014, 22) suggests the ceramics were the result of a single dumping phase related to the working life of the ovens. A wide range of bone and shellfish remains and the seed of a single unidentified plant were recovered from the midden assemblage and were analysed.

Bone assemblage

An assemblage of animal bone was recovered from the O7-15 midden and from a number of other associated contexts. Mammal, bird, and fish bone was recovered, and a number of bone fragments were identified to species level.

Bone was recovered from seven archaeological contexts (Table 6.1). These included one pre-dating the oven use, three of residue associated with the ovens, and three post-dating oven use. The vast majority of bone came from the three residue contexts. Faunal assemblages derived from the three phases of site occupation were analysed separately to attempt to isolate differences over time.

Excavation methods favoured the recovery of large fragments and whole bones over small fragments. Davis (1987, 36) suggests that bone assemblages will be biased towards larger bone fragments, when excavation favours visual recovery, and that sieving is required to recover smaller bones. This leads to a bias towards larger animal species in unsieved assemblages. Sieving using a 5 mm screen was only conducted for every third bucket of sediment excavated from the midden, due to time constraints and labour shortages. The pre-oven use sediments were not sieved at all. The majority of small whole bones were recovered during sieving, suggesting that, if all excavated sediment had been sieved, a larger assemblage of small animal bone would have been recovered. It is considered that the recovered assemblage is biased towards larger bone fragments and, thus, larger animals.

Bone was variably preserved, ranging from robust well-preserved specimens to very fragmentary and crumbly pieces. No individual context had better preservation than another with all contexts containing good to poorly preserved specimens. Fish bone was generally better preserved than mammal and bird bone. The majority of bone was fragmentary rather than comprising complete bones and, as such, identification often had to be inferred from the surviving parts. The majority of specimens recovered were individual bones, suggesting rubbish disposal. This assemblage is not the result of the discard of whole animal carcasses, but bones discarded individually, probably from food waste. Only one specimen with articulated bones still in association was located: an ungulate lower leg (probably sheep/goat), comprising ulna, radius, carpals, and metacarpal.

Table 6.1. Archaeological contexts from which bone was recovered. © S. Winter.

Context number	**Context type**	**Associated with?**
1014	Upper midden deposit, bone and shell rich	Same phase as ovens, interpreted as waste from oven use
1019	Levelling layer	Overlies oven remains, post-dates their use
1046	Redeposited fill of [1045] storage jar	Part of levelling layer, post-dates use of ovens
1050	Lower midden deposit, underlies (1014)	Same phase as ovens, interpreted as waste from oven use
1056	Levelling layer for mud-brick wall	Part of levelling layer, post-dates use of ovens
1064	Mud-brick collapse and rubbish layer underlying midden	Predates use of ovens
1075	Burnt residue from oven use – midden	Same phase as ovens, interpreted as waste from oven use

The bone assemblage was sorted into diagnostic and non-diagnostic fragments (Table 6.2). Diagnostic fragments were those where a specific skeletal element could be identified and other information derived from the specimen. Non-diagnostic fragments were those too fragmented to allow skeletal elements to be identified. Non-diagnostic fragments were counted, weighed, and then discarded from further analysis. Diagnostic fragments were individually examined and the specific or general skeletal element identified. Diagnostic fragments were originally sorted into general body part (*e.g.* long bone, cranial bone, vertebrae) and identified to a specific body part (*e.g.* mandible, femur, humerus) where possible.

Fragments were then sorted into a number of general and specific taxonomies (Table 6.3). Identification of specimens was based on standard reference works (*e.g.* Hillson 1992; Matsui 2007; Olsen 1968; Walker 1986). The division follows class (mammal, bird, fish – Table 6.4) and where possible, genus or species. Some fragments could not be identified to species level, but could be included in a general grouping within the basic taxonomy (*e.g.* ungulate, waterbird, large bony fish). Across the entire assemblage of 773 bone fragments, only 21 could be identified to species level, in most cases with an MNI of only one (Tables 6.5–6.7). However, numerous whole bones could not be identified to species level, due to the lack of appropriate comparative material. The assemblage is thus considered to represent many more individual animals than the MNI of 21. Identified specimens include mammals (cattle, sheep/goats, pigs), birds (chickens, ducks, pigeons, geese, ibises), and numerous species of bony fish, though only one (Nile Perch) was identified. These animal species represent those readily available locally in Ptolemaic Egypt (Crawford 1979) and no exotic or imported species were identified within the assemblage.

A number of bone fragments were modified before deposition, either through cooking or butchery (Table 6.8). Fragments had been subjected to heat before deposition, either in the

Table 6.2. Ratio of diagnostic vs non-diagnostic bone fragments within the assemblage. © S. Winter.

Phase	**Total No. Frags**	**Diagnostic**		**Non-diagnostic**	
		No.	***%***	***No.***	***%***
Pre-oven	167	54	32.3%	113	67.7%
Oven-residue	584	240	41%	344	59%
Post-oven	22	13	59.1%	9	40.9%
Total	773	307	39.7%	466	60.3%

Table 6.3. Taxonomic divisions used within the assemblage. © S. Winter.

Class	**General grouping**	**Genus/Species**
Mammal	Ungulate Feline Canine	Sheep/Goat (*Ovis/Capra*) Cow (*Bos*) Pig (*Sus*) Camel (*Camelus*) Horse (*Equus*)
Bird	Water Bird Large Bird Small Bird	Goose (*Alopochen*) Duck (*Anas*) Chicken (*Gallus*) Pigeon (*Columba*) Ibis (*Threskiornithidae*)
Fish	Large fish Small fish	Nile Perch (*Lates niloticus*) Mullet (*Mullus*)

Table 6.4. Breakdown of identified specimens by class. © S. Winter.

Class	**Pre-oven**	**Oven residue**	**Post-oven**
Mammal	19	145	5
Bird	34	74	0
Fish	1	53	6
Total	54	272	11

Table 6.5. Identified specimens from oven period contexts. © S. Winter.

Taxonomic ID	**No. Frags**	**MNI**
Cow	2	1
Sheep / Goat	3	1
Pig	2	1
General ungulate	32	3
Feline	1	1
Goose	1	1
Ibis	2	1
Pigeon	1	1
General small bird	2	2
Total	46	12

Table 6.6. Identified specimens from contexts pre-dating oven use. © S. Winter.

Taxonomic ID	**No. Frags**	**MNI**
Sheep / Goat	1	1
General ungulate	2	1
Chicken	2	1
Duck	2	2
Ibis	2	1
General large bird	2	1
General small bird	1	1
General small fish	1	1
Total	14	9

Table 6.7. Identified specimens from contexts post-dating oven use. © S. Winter.

Taxonomic ID	**No. Frags**	**MNI**
Sheep / Goat	1	1
Nile Perch	1	1
Total	2	2

Table 6.8. Modified bone across all contexts. © S. Winter.

Modification	**Pre-oven**	**Oven residue**	**Post-oven**
Cooked	2	152	0
Burnt	0	1	0
Butchered	0	2	0
Total	2	155	0

form of direct burning, or simple heat treatment. A single sheep leg bone showed evidence of direct charring and was classified as burnt. Those bones that had undergone heating, but without evidence of charring, were classified as cooked. The charred bone may be the result of direct roasting over an open fire, but could also have occurred if meat on the bone was placed within *tannour* style ovens. Cooked bone may be the result of meat on the bone being fried or cooked in stews or casseroles. Butchery marks were identified on a small number of bone fragments, primarily those deriving from large mammals.

The large number of modified fragments and the context in which most of the bone was found suggest it was the result of food waste from human consumption. Bone from the oven-use phase is interpreted as being deliberately deposited in the rubbish midden contexts, and the oven residue assemblage is thus interpreted as being recovered in primary deposition. The bone assemblage recovered from the pre and post-oven use layers probably also represents food waste, although it could be in secondary deposition, having been moved from elsewhere.

Shellfish

Whole shells and shell fragments were collected and processed by context, and were cleaned with water and a brush. They were sorted by species for each context and photographed from multiple angles, displaying in full any spires, body whorls, apertures for gastropods, and displaying all posterior, anterior, dorsal, and ventral views for bivalves. Upon leaving the field, these photographs were then used along with a collection of field guides (*e.g.* Abbott and Dance 1986; Claassen 1998; Oliver 2004) and shell databases to identify specimens.

This paper refers to shell types by family names, as only a small number of shell types were identified to either genus or species. All shells had lost their colour over time and species identification is almost impossible without visible colours. Counts were determined after the species were sorted. Gastropods were counted by tallying the number of spires and body whorls containing more than 50% of the original shell. Bivalves were counted by tallying the number of umbones or shells containing more than 50% of the original shell; this number was then divided by two and rounded up.

The majority of the recovered shell assemblage derives from three distinct families: *Donacidae*, *Naticidae*, and *Ostreoidae*. *Donacidae* comprised the highest number of shell debris. The *Donax* genera are small saltwater clams found within the Mediterranean. Two species of *Naticidae* were found, both from a different genus. These genera have yet to be identified, but both are edible sea snails, most likely deriving from the Mediterranean. *Ostreoidae,* containing nine identifiable genera, was the third shell type, all of which are edible, true oysters.

Table 6.9. Breakdown of shells by family and context. © S. Winter.

Family	**Genus**	**1014**	**1050**	**1064**	**1078**
Viiperidae	*Bellamya*	2	0	2	2
Naticidae	Two Genera	49	14	10	8
Donacidae	*Donax*	69	11	6	5
Ostreoidae	Nine Genera	21	1	4	0
Other		10	1	1	0
	Total	151	27	23	15

Along with these three families, four other shell types were found within the midden. Two of these are saltwater clams from the Mediterranean: *Cerastoderma glaucum,* edible 'lagoon cockles' from the family *Cardiidae*, and *Solecurtidae*, of a yet to be identified genus. *Viviparidae bellamya* was the only freshwater snail recovered from the unit, commonly referred to as a 'river snail'. *V. bellamya* are found throughout the African continent and probably derive from the Nile. The final shell type is an unidentifiable clam.

The upper layer of the midden contained a significantly larger amount of shell material than any layers excavated below it. Here, the *Donacidae* shells were in a much higher concentration than any other family, but this stratum still contains a higher percentage of *Ostreoidae* than any other. This could be based on the fact that oysters were a popular food item for the Greeks and the Romans. Contexts 1050, 1064, and 1078 – the three consecutive layers beneath 1014 – contain a very similar count, though they contain a larger percentage of *Naticidae* than *Donacidae*. While 1050 is believed to be a continuation of the 1014 deposit, both 1064 and 1078 are both mud-brick collapse. All shell types found within these layers were foodstuffs and could represent a build-up of waste and rubbish inside a collapsed building.

Discussion

The combined oven complex and faunal remains from the associated midden provide clear evidence of the diet of Timai residents in the first century BCE. These data suggest that a wide range of food was prepared and consumed at this site. There is a spatial and temporal link between the ovens and food remains recovered from the middens. It is likely that the ovens were used for baking bread, but they could have also been used for cooking a wide range of food types.

The ovens recorded in O7-15 conform to the African/west-Asian *tannour* style, rather than the more common Roman types. Depraetere's (2002) survey suggests that various versions of this style of oven were used throughout Egypt during the Graeco-Roman Period, both in domestic and industrial contexts. The seven ovens recorded in O7-15 probably comprise cooking on an industrial scale and represent a larger collection of ovens than at any site described within Depraetere's survey. Moreover, this is the only recorded example of *tannour* type in the Nile Delta. Out of the 98 sites listed by Depraetere (2002, 132–134), Tebtynis in the Fayum has the most ovens found in a single location, *i.e.* five. Including two houses in Tebytnis, there were only 13 sites containing more than one oven, only four of which had more than two. The sites with multiple ovens were interpreted as bakeries used for industrial rather than domestic purposes.

One possibility for the O7-15 ovens is that they were a bakery, although it should not be assumed that the ovens were purely for the production of bread. The sources suggest a range of baked goods, including numerous types of bread, and a wide range of cakes (Crawford 1979, 144). Indeed, the diverse food remains reported here argue against the use of the O7-15 ovens purely for the production of bread. Instead, the faunal assemblage together with the recovered bones displaying evidence of cooking, suggests a wide range of food was prepared here. This is also supported by the ceramic assemblage, which suggests that a range of wet and dry foodstuffs, and drinks were being prepared (Hudson 2014, 22).

This wide variety suggests that the O7-15 features may represent a restaurant or a facility similar to a Roman *popina*, rather than simply a bakery. The chronology is wrong for an actual Roman *popina*, and we make no suggestion that the O7-15 ovens represent a Roman facility of that type in the first century BCE. However, the physical layout of the features in O7-15 are reminiscent of this style of bar and restaurant, which may help to understand the use of this area by analogy. At *popinae*, people normally ate outside. Typically, counters were L-shaped and food and wine were served to people from the openings in the counters. The serving counter continued until it was interrupted by another counter containing large circular holes used for round amphorae known as *dolia,* set into the counter. These amphorae probably contained olives, grapes, or wine. In a corner of the *popina* would have been another L-shaped counter, where the ovens were located. These ovens would have been used for baking bread and cooking meat (Angela and Conti 2009, 264–267). A *popina* would have also served hot beverages, beer, and wine, while storage jars may have contained ingredients such as olives, figs, spices, and salted meats. The utilitarian nature of the ceramic assemblage recovered from the midden also supports the interpretation of a restaurant similar to a *popina* frequented by lower status residents of Thmuis. A range of serving and cooking vessels were recovered, arguing for the site as a food outlet. The low status nature of the assemblage suggests that the food prepared here was intended for the Thmuis labouring classes, rather than elites.

Similar to the faunal remains recovered from Karanis (Enders 1933), all the animal species represented in the midden assemblage were typical of those available as food in Egypt. The small number of identifiable bone fragments did not allow a species preference to be identified within the diet of Thmuis residents. Likewise, the predominance of mammalian bone remains probably indicates a post-depositional preservation bias, rather than dietary preference. However, the midden assemblage indicates that a wide range of foodstuffs were available to Thmuis inhabitants. Large ungulates in the form of cows, sheep, and pigs, and birds such as ducks, geese, chickens, and pigeons, indicate a reliance on domesticated species. There were also numerous unidentified bone specimens within the assemblage that may have come from wild species. The lack of pig bones is of interest. Beef was the prestige meat in Egypt (Ikram 1995, 199), but this was supplanted by pork during the Roman Period (Bagnall 1993, 29), and numerous pig bones were recovered from as yet unanalysed late-Roman (200–400 CE) contexts in another part of the tell. This absence of pig in the O7-15 faunal assemblage may be the result of a number of factors, including lack of Roman influence at this time, the inability to access pork for socio-economic reasons, or simply as a result of preservation bias.

The presence of fish remains deriving from species present in the Nile suggests local fishing, but the large number of imported shells suggests that numerous foodstuffs were imported into Thmuis at this time. Most of the shells represented in the assemblage are Mediterranean species, with none deriving from the Red Sea. All the clam species come from a variety of places within the Mediterranean and could have come to Thmuis from the Egyptian coastline, but also from potentially as far away as Greece or Italy. The *Bellamya* is an inland African species probably deriving from the Nile, but it may possibly have been brought in via trade routes with cultures further south. Oysters were a delicacy collected from all across the known world. However, Xenocrates refers to the Nile as a popular source for oysters during the Ptolemaic Period (Andrews, 1948). The oyster species could possibly have derived from the Mediterranean or the Nile. The shell assemblage suggests that Thmuis occupants during this period had ready access to shellfish and that these were probably popular dietary choices, including snails, clam, and oyster. The Mediterranean origin of the shellfish species suggests trade links with the north rather than the Red Sea. Shell assemblages recorded at Berenike for the same period display very different types of shellfish (Van Neer and Ervynck 1996, 357), all deriving from the Red Sea, none of which appear in this Thmuis assemblage. Conversely, the shell evidence from Karanis (Winslow 1933, 92–3) suggests a Mediterranean or local origin for shellfish in the

Fayum. Unsurprisingly, shellfish at Thmuis derives from trade along the Nile, rather than via overland routes from the Red Sea.

While there is ample evidence of meat, shellfish, and bread consumption, there is limited evidence for the consumption of fruit and vegetables. As suggested by van der Veen (2011, 198), plant foods in the form of cereals, vegetables, and fruits provide the majority of total calories consumed in most traditional diets. Despite this, they are often invisible archaeologically and rarely survive in any but the most optimal conditions. While soil samples were taken during excavation from both the midden and from around the ovens, there has not to date been the capacity within the Timai team to conduct analysis of those samples for evidence of macrobotanical (seeds) or microbotanical (pollen, phytolith) remains. However, it is likely that other foods were also consumed, and Bagnall (1993), relying on papyrological evidence, describes a range of other foodstuffs widely consumed during the Roman Period. These include cheese, eggs, oils, fruits, and vegetables; a change in consumption from beer to wine is also noticeable. Consequently, it is likely that the food remains represented within the O7-15 midden were consumed along with a range of foods less likely to survive in the archaeological record.

Conclusion

The above results comprise evidence of diet in Thmuis from only one location during the late Hellenistic and early Roman periods. Because of the fragmented nature of the assemblage, the findings presented in this paper are necessarily general, rather than specific. While a general diet is described, specific species ratios and dietary choice are only speculative. Nevertheless, the data presented in this paper significantly contributes to our knowledge of the diet of Thmuis residents. A wide range of dietary choice is represented, derived from animal species sourced both locally and imported from some distance. Likewise, the large-scale cooking of food suggested by the oven complex indicates that food in Thmuis was not only produced and consumed in domestic contexts, but also in larger industrial-style commercial facilities. The utilitarian nature of ceramics and the location of the O7-15 complex suggest that food produced here was intended for the labouring classes rather than elites. This argues that workers in the industrial areas had a wide range of food options available to them.

This preliminary analysis of a food production complex provides some baseline data for food consumption within Thmuis. This needs to be tested against archaeological evidence from other parts and periods of occupation at Thmuis. Luckily, the preservation of bone and shell remains throughout the tell is excellent and the analysis of a number of other faunal assemblages is just beginning. This should enable a more complex view of food consumption within Thmuis, dependent upon location, time period, and socio-economic status.

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7

Terracotta Figurines from Egypt as Agents of Cultural Globalisation in the Indian Ocean

Serena Autiero

> History is marked by alternating movements
> Across the imaginary line that separates
> East from West in Eurasia
> *Herodotus*

Introduction

In the past, important trade networks arose in the Western Indian Ocean. In order to understand such a wide phenomenon, a comprehension of historical, literary, epigraphic, numismatic, archaeological, and art-historical data is needed (Autiero 2012). Moreover, the role of religions and related artefacts is key. Thus, in a study involving Indian Ocean trade, collaboration from different specialisations is necessary in order to draw a complete picture of the historical phenomena that took place.

In this respect, the Indian Ocean needs to be considered as a liquid continent with dynamics of its own; it is indeed an adaptable cultural space. Contesting an old perception of static and closed state formations, we can instead detect an outflow of goods, people, ideas, and culture. Traders and sailors are the main characters in this scenario, even if they are usually just considered in the practical aspects of trade (Autiero 2012, 1). During the Hellenistic and Roman periods, we can clearly perceive fluid borders and open frontiers, allowing people, culture, and art to travel.

Trade in the Indian Ocean

Focusing on the Western Indian Ocean, a study of the history of art highlights the existence of transferred iconographic patterns, resulting from the close link between Asia and the Mediterranean world (Autiero 2012, 248). We now know more about the period between the 3rd century BC and the 5th century AD thanks to the considerable amount of archaeological data unearthed. A number of artworks support a new picture of interaction and reciprocal influence for this period (Autiero 2012, 175–241), providing a clearer understanding of the continuity of relations and of mutual exchanges in this part of the world. By tracing back interconnections and interactions, local contexts can be broadened into a more global perspective. Globalisation is a somewhat fashionable and overused concept, but still positively used in historical studies; long before the interconnected world we live in today, an early version of globalisation existed (Frank 1998; Autiero 2012, 31–35).

From the 1st century BC, a direct link between Egyptian Red Sea ports and India was possible, thanks to the exploitation of the monsoon wind by merchants during the centuries before the secret was safeguarded firmly in the hands of Indian and South Arabian sailors (Casson 1989, 11). Warmington (1928) was the first scholar to refer to these links between India and the Egyptian Red Sea as *Indo-Roman Trade*, a term that is still used in current scholarship (Autiero 2012, 247). Until the re-excavation of Arikamedu in the late 1980s (Begley *et al.* 1996, 2004), the interpretation of Indo-Roman trade followed an existing orthodoxy – fostered by Sir Mortimer Wheeler, who first excavated this site from 1945 – as controlled by Rome (Wheeler *et al.* 1946; Wheeler 1954a, 1954b, 1955, 1976; for an exhaustive introduction to the problem see Tomber 2008, 13). This initial approach to Indo-Roman trade strongly affected comprehension of the exchange phenomenon, moreover, most of the relevant written sources are from the classic world, both in Latin and Greek, thereby reinforcing this unbalanced view (Karttunen 1989 and 1997; Autiero 2012, 85).

Archaeological data confirmed the movement of people and goods across the Indian Ocean with tangible proofs, but we can also draw from literary sources such as the *Periplus Maris Erytraei*, a short sailors' handbook written in the late 1st century AD by a Greek-Egyptian trader (Casson 1989). The *Periplus* is a prominent source on so-called Indo-Roman trade, and even if all the information in the *Periplus* refers to a precise period, it allows us to draw comparisons to other periods and places.

The anonymous author of the *Periplus Maris Erythraei* focuses on Romano-Egyptian exports to overseas harbours. The *Periplus*' silence about Egyptian imports and the exchanges between non-Egyptian harbours is based on the author's personal interest and his knowledge only of the trade of Roman Egypt (Autiero 2012, 105 ff.). The information in *Periplus* is wider than expected thanks to the author's documentary inclinations, but if compared to archaeological data, limitations are revealed. Indeed even if detailed, the *Periplus* cannot be embraced without further investigation. As an example, there is no mention of teak wood among the raw materials imported from Egypt, according to the *Periplus*. Nevertheless, Indian teak wood has been found in Berenike (Tomber 2008, 73). This evidence shows that trade mentioned in the *Periplus* was not the entirety of that which occurred in Indian Ocean harbours; other artefacts from other countries were traded and exchanged along these routes.

Terracotta figurines

The mobility of objects is of fundamental importance. Small artefacts are a key element in the development of a shared culture. We can see absorption and integration leading to the production of objects with characteristics of foreign origin; these artefacts were sometimes agents in the circulation of iconographic models. Small objects and migrant workers (traders, artisans, and businessmen) can be the source from which iconographic elements were absorbed.

The example of a type of terracotta figurine is particularly significant, as it is attested in India and in Egypt, and potentially demonstrating a direct link, as it will be argued in this paper. The terracotta figurine is a category that lacks sufficient study, even though it is an extremely common object used for domestic worship. The religious function and easy displacement make these figurines ideal for the maintenance of worship by expatriates.

Cultural and social aspects find their own expression in the manufacture of terracotta. Numerous examples have been found during archaeological excavations. Terracotta is very important in order to clarify cultural interactions, but scholars dealing with international trade seem to have underestimated the importance of the figurines as a proof of transcultural interactions.

Archaeological discoveries, ethnographic documentation, and literary sources indicate a wide diffusion of these figurines throughout the Indian subcontinent with a variety of uses including worship, decoration, children's games, and magic (Banerji 1984, 21). In spite of this variety, religion is the main use (Gaur 1983, 201). In particular, the analysis of the decorations and styles is emblematic of the taste of a particular period and allows us to infer the use of the different figurines. In India, the most common method of construction is hand modelling. However, the use of moulds is also attested, depending on the taste of social classes, especially in conjunction with urbanisation (Autiero 2012, 211).

Hybridisation with the Romano-Egyptian iconography is clear in an iconographic model that spread first in the South-Central area of India, namely the Baubo/Yoninilaya type (Fig. 7.1). Before focusing on this case study, it is important to briefly underline a peculiar development in Indian terracotta production. In the early centuries AD, India was a rich country involved in a dense international trade network; contacts with Rome and the Hellenistic world were frequent and ensured the inflow of vast treasures into the subcontinent. Northern India was governed by the Kushana kings, a dynasty of foreign origin that assured India a long period of peace. During the Kushana reign, terracotta production reached very high levels.

Around the 1st to 2nd centuries AD, Indians developed the use of the double mould in order to produce three-dimensional figures. In the same period in the southern territories, controlled by

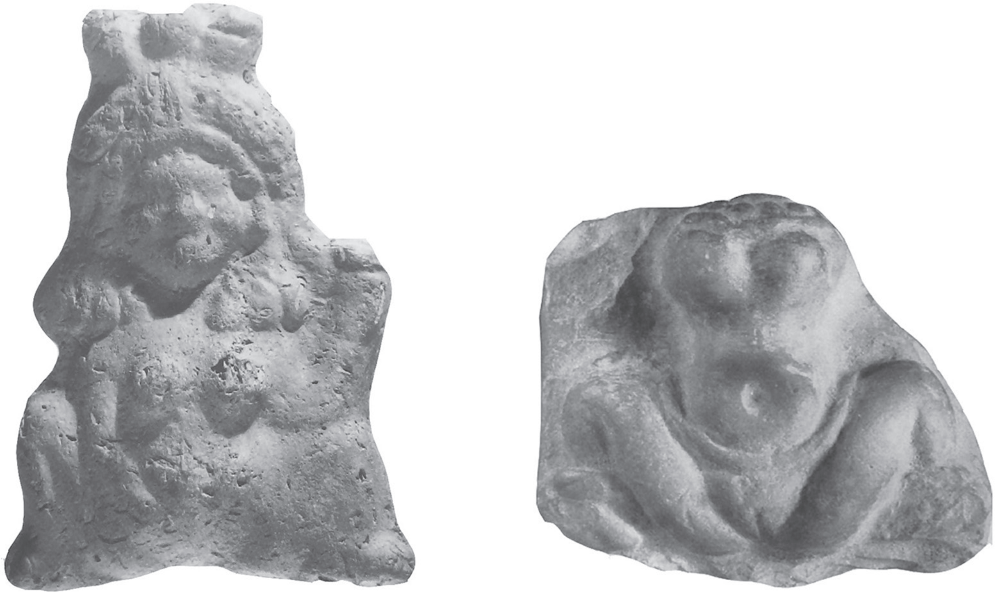

Figure 7.1. Left: Egyptian Baubo (Török 1995, tav. CL); Right: Yoninilaya from India (Sankalia 1960, 120, fig. 18).

the Satavahana dynasty, similar but extremely refined double mould production was established. The use of the double mould technique, both in the Kushana north and in the Satavahana south, probably derives from the same source. In fact, both empires were integrated in a commercial network that linked them to the Hellenistic world (Autiero 2012, 212).

Between the 1st and 3rd centuries AD a new pattern emerged in Indian terracotta production, both in the north and in the south; namely an increasing depth of single moulds, and the production of three-dimensional figures from two moulds. This technique was already established in the Hellenistic and Roman east. Referring to the rich corpus of terracotta figurines from Alexandria, it is possible to find precise comparisons with Satavahana material from a technical, structural, and typological point of view (Brancaccio 2005, 56).

In the terracotta production of south India, the favourite material was an off-white depurated clay, usually called kaolin, although proper analysis to confirm such an identification is still lacking (Brancaccio 2005, 66, footnote 19). In any case, the choice of this material was stylistic in nature and displays the knowledge of pale western terracottas. In Indian tradition, the use of such a pale material does not have a precedent; it could have reached the Deccan following trade contacts with Egypt.

In Egypt this typology of terracotta figurine takes the name of Baubo (Lexicon Iconographicum Mythologiae Classicae 1, 87–90; Török 1995, 132), while in India it is known as Yoni or Yoninilaya, a personification of the vagina. A link between the Yoni and Baubo was highlighted as early as Murray's article from 1934 on the so-called female fertility figures. Murray's work fostered a fruitful debate on the identification of the subject depicted in western figurines (as an example; Rose 1934, and Codrington 1935). Since then, the name of Baubo has been used by scholars to label those Greek-Roman female terracotta figurines showing their genitalia through the act of *anasyrmene* (skirt-raising).

Baubo in Egypt is a peculiar character in the stories related to the mythology of Demeter, within the religious frame of the Eleusinian Mysteries (Marcovich 1986). This female character takes on a comical crouched position, showing her genitalia in order to make Demeter smile, as the goddess was desperate during her unfruitful search for her daughter Persephone/Kore. Besides mythic connections, Baubo's crouching position clearly referred to delivery and underlined the generative power of the feminine.

Terracotta representations of Baubo were already common in Ptolemaic Egypt with different iconographies (Brancaccio 2005, 56). These kinds of figurines were probably used as amulets in fertility cults – as suggested by the position itself – but also as symbol of unconditional devotion to the divinity, referring to Baubo's shameless behaviour.

The main characteristic of Baubo/Yoninilaya iconography is a strong emphasis on the representation of the genitalia in childbirth position – the only permanent feature in an otherwise variable iconography. In Egypt, the most ancient examples of Baubo-type terracotta figurines, dated to the first half of the 2nd century BC, show a tight crouched position with high knees and arms along the body that reach the genitalia or the lap (Török 1995, 130–133; pl. C, 186–188; Fig. 7.2). Later items from the 1st century AD are more relaxed in posture, sometimes they have their arms raised and the legs symmetrically spread (Fig. 7.3). Török describes the figurines with raised arms as *orants*, even if they show their genitalia (Török 1995, n. 169, male; pl. XCIII, 171; pl. XCIV, 170, 173; pl. XCV, 172, 174; pl. XCVII, 178, 179, 180; pl. XCVIII, 181). They belong to the same category of Baubo figures, but with a new and different iconographic element. Such a differentiation depends on the chronology and geographic distribution.

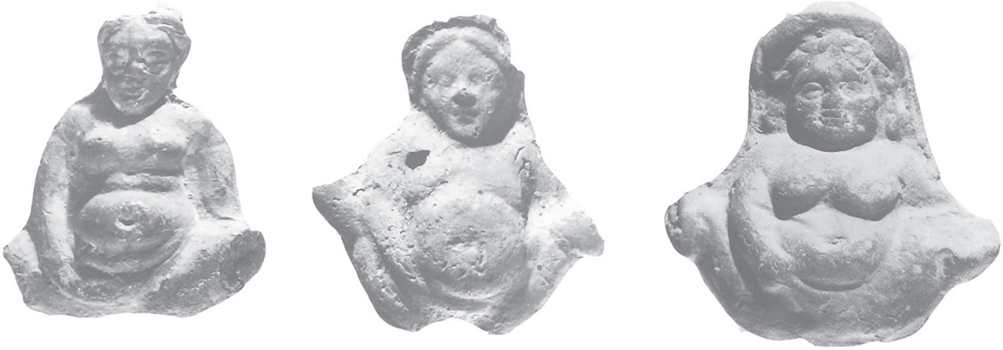

Figure 7.2. Figurines of Baubo, early type (Török 1995, tav. C, n. 186, 187, 188).

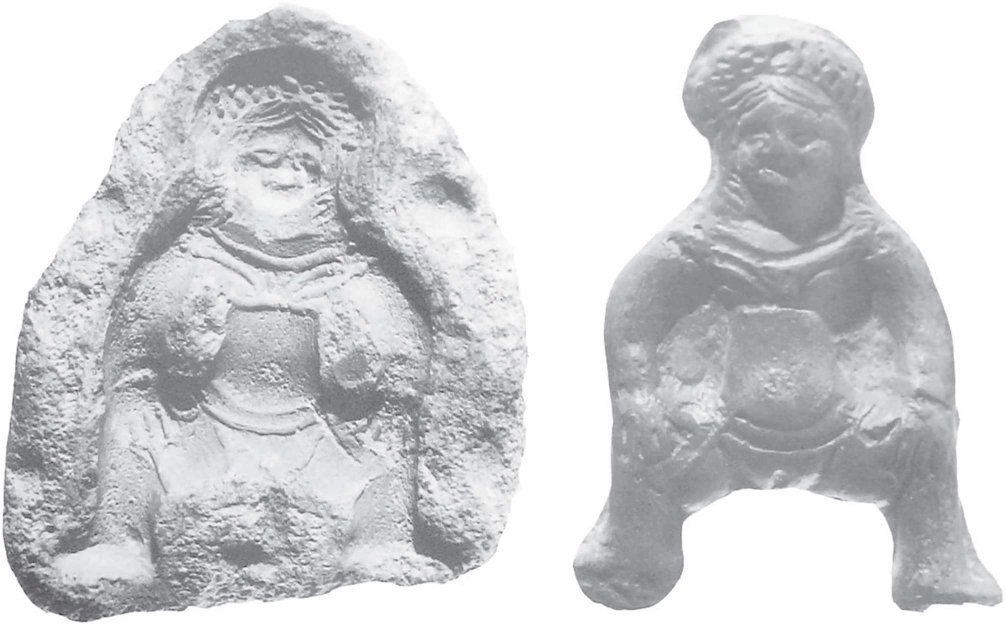

Figure 7.3. Figurine of Baubo, late type and mould (Török 1995, tav. XCIX, n. 183).

The ancestral characteristics of these types of figurines strongly suggest that they were a legacy from an ancient cult, rearranged in order to suit the Hellenistic-Roman context (Sankalia 1960, 114). Indeed the act of *anasyrmene* was not new to Egypt, where it is well attested in funerary paddle dolls dating from the Middle Kingdom (Morris 2011). These legless figurines show the naked pubic triangle, while the skirt fabric clearly covers the buttocks, suggesting that the vulva was intentionally exposed. The underlying mythic episode can be found as a side event in the Contending of Horus and Seth; the goddess Hathor revives the sun god Ra by displaying her genitals and making him laugh (Morris 2011, 85). This episode is at the origin of the importance of genital exposure in ceremonies honouring Hathor and involving dance (Morris, 85). Far more ancient in origin, the cult of Hathor and Ra was also of utmost importance in the Ptolemaic Period. The *anasyrmene* was already perceived in pharaonic Egypt to be a gesture that could revive a god through laughter, thus creating a strong link with Baubo's attempt to restore Demeter. The act of *anasyrmene* in Greek mythology is not exclusively linked to Demeter; it is attested in some terracottas (dated to the 7th century BC) from the Syme sanctuary in Crete, where it is connected to a Proto-Aphrodite/Aphrodite cult (Lebessi 2009, 529). Nevertheless, in this case the representation of the gesture does not show any link with the reviving function found in Pharaonic and Hellenistic Egypt. It may refer to a fertility cult and to rites of maturity, part of a formative stage of the Classic Aphrodite cult (Lebessi 2009, 537).

Baubo *anasyrma* iconography travelled to peninsular India during the 1st century AD – the heyday of Indo-Roman trade. In India, the representation of female deities with fertility features had been widespread since ancient times, but some typologies from the 1st century AD onward are linked to the Western impact on the Indian substratum, as suggested by stylistic feature and by the archaeological context (Autiero 2012, 210). Dealing with Roman settlements in India, local populations might have noticed a devotional form characterised by the use of terracotta figurines, which could have been acknowledged as a common religious language.

Although long distance trade is not the only reason for the diffusion of religions, it is definitely an important factor; therefore, trade deserves attention even in religious studies (Foltz 1999, 7). Religion also affects economic activities, and other aspects of culture find new paths of diffusion into the trade networks by following religion (Lewer and Van den Berg 2007, 765–794).

A specific way in which religion can influence international trade is through its network effect (Eakin 2003). The sharing of religious ideas among people living in distant countries creates networks of trust that aid economic transactions (Lewer and Van den Berg 2007, 765). Long distance trade in the Western Indian Ocean depended on the regular pattern of the monsoon. The name *monsoon* comes from the Arabic *mausim*, referred to as 'the windy season' (de Souza 2002, 34). From May to September, the monsoon blows from the south-west. During this period, vessels from the western end of the Indian Ocean route can sail directly to India. The return journey is aided by the winter monsoon that blows in the opposite direction, namely from the north-east (Casson 1989, 283; Casson 2004, 231). Whilst waiting for the wind to change, the ships were forced to stay for months at a time at one end of the route. During these prolonged stays abroad, traders interacted with local people and became involved in the cultural and religious life of the community. It is possible that in antiquity traders became involved in local cults that shared similar characteristics with those of their homeland, and therefore an actual assimilation of different cults took place. This phenomenon also has consequences in iconography, with the fusion and exchange of peculiar images thanks to the use of portable icons (like terracotta figurines) that traders carried from their land of origin during the ocean crossing.

Indians perceived and assimilated the religious element inherent to Baubo figurines as part of a fertility cult. Thus, they translated this iconography in the personification of the Yoni, female genitals, or Yoninilaya, in a process of adaptation to their own culture (Fig.7.4). The representation of naked female figurines was not new to India, but some peculiar categories dated to the first centuries AD led to the spreading of new iconographies in the Subcontinent. The name Yoninilaya – one of the thousand names of the female deity in the *Lalita Sahasranama* (a hymn inserted in the third part of the Brahmanda Purana) – means 'She who houses the power that generates everything', and it is a generic name that can be used to refer to this kind of iconography (nowadays called Lajja Gauri). Indian Yoninilaya figurines originate from the

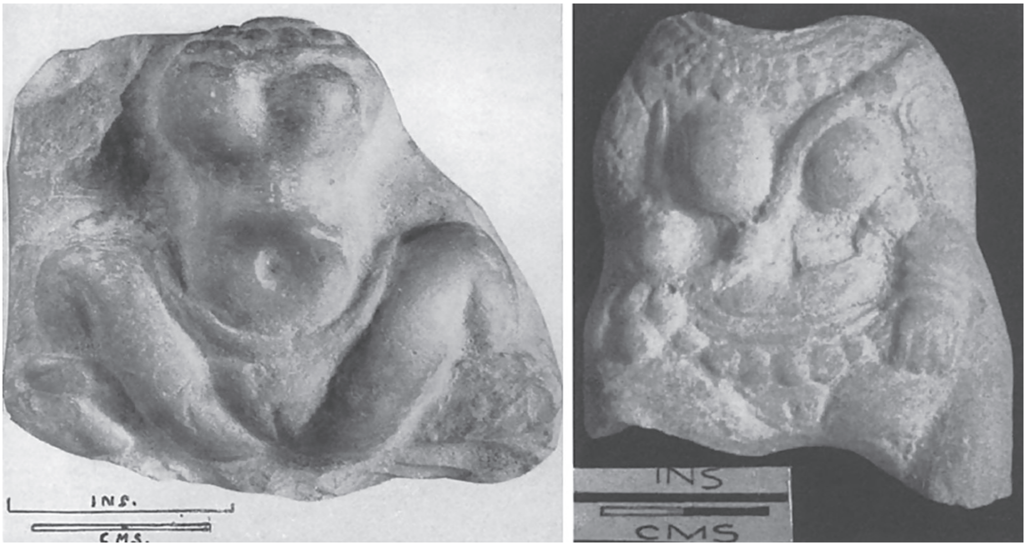

Figure 7.4. Figurines of Yoninilaya from Ter, Maharashtra, 1st to 2nd century. (Sankalia 1960, 120, figs. 18–19).

Hellenistic iconography of Baubo; their diffusion in peninsular India is part of a process of acculturation. The cult related to Yoninilaya figurines seemed to be widespread in the urban elite. Rounded figurines showing their genitals have been found in Ter, Nevasa, Yellesvaram, Nagarjunakonda (Sankalia 1960; Brancaccio 2005). This cult seemed to be particularly widespread among the aristocracy, as suggested by an inscription from Nagarjunakonda, where a queen offered an image of Yoninilaya so that her prayer would be fulfilled (Desai 1976, 158). Another indication of the elite use of the Satavahana terracottas and of their connection to the mercantile class in an urban context is their strong decoration together with the themes represented; for example, bejewelled youngsters, couples, and profusely ornate animal figurines (Desai 1976, 157).

The exchanges of culture and ideas are typical of urban environments. Trade between cities encourages the spread of themes and styles that can take root and fully develop in the contexts of adoption. The cult of the shameless deity is definitely linked to a fertility ritual, as witnessed by contemporary examples. For instance, the Warli tribe (settled in the Indian states of Maharashtra and southern Gujarat, an area strongly involved in Indo-Roman trade) represents a shameless goddess showing her genitalia in ceremonial paintings made for weddings (Dalmia 1988). In a traditional culture such as India, ethnography proves to be an important and precious tool in the hand of the archaeologists (Allchin 1985, 21; Jayaswal 1986). Nowadays Indian women looking for a child address the goddess Lajja Gauri, represented as Baubo/Yoninilaya showing her genitalia (Sankalia 1960, 121).

The contribution of Egyptian terracottas of the Hellenistic and Roman period to Indian iconography is witnessed not only in female figurines but also in other images. It is possible to detect iconography linked to Bes in some Indian contexts (Lexicon Iconographicum Mythologiae Classicae 1, 107). Bes was represented as a plump dwarf with a wide face and pronounced features, often depicted in a crouched position with a stocky body and short limbs. Bes had an apotropaic power and it is likely that lucky amulets in the shape of Bes followed the Egyptian traders. Moreover, Bes images together with other grotesque gods from Egypt could also have reached India in the shape of cosmetic boxes (Brancaccio 2005, 60). In the Indian culture the identification of the grotesque figure of Bes with *ganas* or *yakshas* was immediate, and the new Western contribution enriched a strongly local image (Fig. 7.5).

It is well known that the image of Bes became widely spread in the Mediterranean world and that only part of his original Egyptian iconography was preserved. As in India, Bes iconography was made into local images and was enriched with local contributions. In particular, the relationship between Bes and Silenus seemed to reflect an assimilation process, similar to *yaksha* iconography in India. Greek iconography already had an image formally similar to Bes: Silenus. In Thasos, a Silenus head has been found, dating to the end of the 6th century BC and clearly showing a similarity to Bes. A direct influence of Bes on the Silenus from Thasos, perhaps through the Phoenicians, cannot be ruled out (Jesi 1962, 263). The relationship between the image of Bes and Silenus is not only based on an iconographic analogy, but on similarities in the iconographic genesis and functions (for Bes in his role in initiation rites, see Jesi 1962, 272; or for Bes as a musician, see Jesi 1962, 266).

Another important area of distribution of Bes iconography is western Asia. With the rise of the Achaemenid Empire, the number of Bes images in this part of the world underwent a veritable explosion (Abdi 1999, 115). Apart from actual Bes representations, there are significant Iranicised Bes images. Indeed, Bes was adopted as a counterpart for local iconographies in the Achaemenid Empire. As an example, the existence of a Bes-griffin/Bes-lion image, a hybrid of the Achaemenid lion or griffin with a Bes head has been reported (Abdi 1999, 119; Abdi

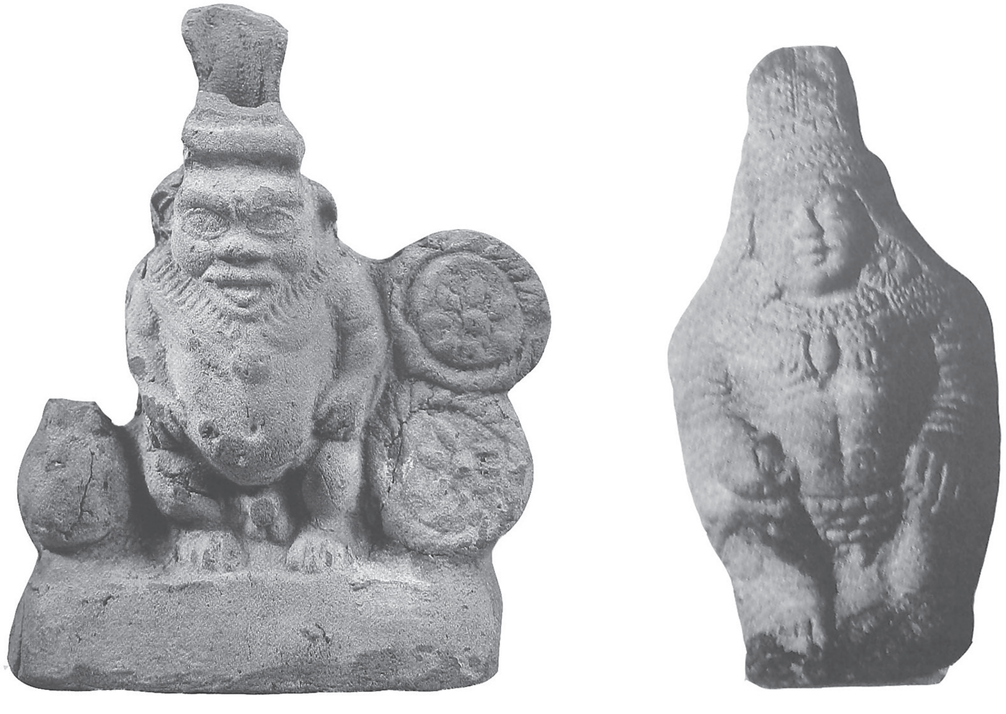

Figure 7.5. From left: Bes from Egypt (Török 1995, tav. III), an Indian gana (Bautze 1995, tav. XL, c).

2002, 146). This widespread diffusion of Bes and Bes-hybrid images strongly supports the later diffusion and adoption of Bes iconography in the Indian subcontinent.

In conclusion, culture and religious artefacts were moved along trade routes as goods and exchanged. Indo-Roman trade is the best-known part of a wider phenomenon of ancient globalisation, as indicated at the beginning of this paper. The active parties in this trade route were Satavahana India and Roman Egypt. With a multi-disciplinary approach it is possible to detect the long lasting outputs of trade contacts in local cultures. Most of all, it is possible to identify the fundamental contribution of apparently unimportant objects like terracotta figurines for personal devotion. From Egypt they reached India and were diffused into the local context; iconography merging with pre-existing local cults, iconography and rituals.

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8

Cross-Cultural Relations between Egypt and Greece during the Early Iron Age: Representations of Egyptian Lion-Headed Deities in the Aegean

Electra Apostola

Introduction

From the early Iron Age onwards, Egyptian artefacts – especially amulets, figurines, scarabs, and vases made of faience – were distributed throughout Syro-Palestine (Herrmann 1994, 2002), Cyprus (Clerc *et al.* 1976), Italy and Etruria (Hölbl 1979), Sardinia and Malta (Hölbl 1986), Carthage (Vercoutter 1945), and other Mediterranean sites. In the Greek World, so-called *Aegyptiaca* were imported from the tenth century BC, but most regularly from the middle of the eighth to the sixth century (Brown 1974; Skon-Jedele 1994). From *c.* 660–550 BC, local imitations of Egyptian objects were also manufactured in the workshops of eastern Greece and later in Naukratis (Gorton 1996; Webb 1978). A significant proportion of *Aegyptiaca* found in the Aegean are amulets and figurines depicting Egyptian deities and frequently include lion-headed figures that have been identified with the goddess Sekhmet. The aim of this paper is to decipher the character and function of the lion-headed figures on amulets, figurines, and scarabs discovered in sanctuaries and tombs of early Iron Age Greece. I will attempt to trace the possible modes of transmission of Egyptian popular beliefs and practices in the Aegean at that time.

Even though most of the leonine-headed deities on objects found in Greece have been identified with Sekhmet, the distinction between Sekhmet and Bastet, another Egyptian goddess, is more difficult to interpret in faience and bronze figures, and especially for those found in areas outside of Egypt (Hölbl 1979a, 108; Sternberg 1984, 324). Bastet was originally depicted as lion-headed, but by the Late Period (LP), she was more usually represented as a cat (Malek 1993, 94–96). It is, therefore, likely that most lion-headed figures should be identified as Sekhmet (Herrmann 1994, 146). In the discussion below I will use the general term 'lion-headed goddess' or the specific name Sekhmet in cases where the identification is almost certain.

Sekhmet was one of the most significant deities within the official Egyptian religion, as well as in popular religion and magic. The lion-headed goddess had a dual nature: she appeared as a punisher of humankind and, at the same time, as a protector and healer. In the Pyramid Texts (PT 262, 2206), she is represented as the divine mother of the king, a role that continued during the New Kingdom (NK) and the LP (Germond 1981, 191–99; Sternberg 1984, 325). This goddess, who personified the destructive aspects of solar energy, was invoked in magic rituals to protect the state (Pinch 1994, 37–38). Her protective power was extended to the country and its inhabitants

(Germond 1981, 275–86, 335–345). Her main cultic centre was at Memphis, where she was worshipped as consort of Ptah and as the mother of Nefertem. However, her cult can be traced also at other sites, such as Bubastis and Karnak (Hoenes 1976, 100–42; Sternberg 1984, 324).

Since the Old Kingdom, Sekhmet had been closely associated with the calm and protective Bastet, the cat-headed goddess of love and fertility. Gradually their identities merged (Hoenes 1976, 168–71), until both goddesses were considered opposite aspects of the same deity – Sekhmet representing the ferocious and destructive and Bastet the peaceful and protective (Sternberg 1984, 325). Sekhmet was traditionally thought to be the daughter of the sun and a manifestation of his 'Eye', along with other deities, such as Hathor, Tefnut, or Wadjyt, with whom she was often assimilated (Lesko 1999, 144, 275–276; Malek 1993, 117–18). She was also assimilated with Mut, who appeared as a lion-headed figure since the Middle Kingdom (MK) (Hoenes 1976, 175–76; Lesko 1999, 137). Because of her warlike character Sekhmet was also identified with the Phoenician goddess Astarte (Sternberg 1984, 327).

On New Year's Day, Egyptians exchanged amulets of Sekhmet or Bastet hoping to pacify the wrath of the goddess (Pinch 1994, 38–39). This is evident in the tradition of the 'seven arrows of Sekhmet', which can be traced back to the MK. As personifications of the wrath of the goddess these entities could bring famine, plague, and various diseases, especially during the epagomenal days, an unstable period associated with inundation and the beginning of New Year, when plague and fatal diseases could strike the population. (Pinch 1994, 37–38; Sternberg 1984, 325).

Evidence from Geometric and Archaic Greece

One of the earliest known and most important representations of the lion-headed goddess in the Aegean comes from a child's tomb in Lefkandi, an important Dark Age settlement on the island of Euboea in central Greece (Popham *et al.* 1980, 178–80; Skon-Jedele 1994, 1208–09; Stampolidis and Karageorghis 2003, 521). Fifty-three identical amulets depicting an enthroned lion-headed goddess with a double-crown, along with a single amulet showing an enthroned Isis with Horus, comprise part of a necklace (Fig. 8.1). These necklaces were discovered in a large shaft grave dating to the first quarter of the ninth-century BC, among a rich assemblage of grave goods including gold, bronze, and glass jewellery (Popham *et al.* 1980, 178–180). Lion-headed figures wearing the double crown can be identified with a fusion of Sekhmet and Mut, whereas Isis wearing the Hathor crown could reflect a syncretistic type of Isis-Hathor (Andrews 1994, 34, 48). Coexistence of Sekhmet and Isis-Hathor figures could indicate their assimilation during the Late Period (*c.* 664–332 BC). The presence of these artefacts in central Greece is likely the result of Euboea's intense commercial presence in the south-eastern Mediterranean during this period, rather than that of Phoenician activity in the Aegean (Coldstream 2003, xxv; Hölbl 2005, 114). Similar necklaces were found at Lachish and at Tarquinia (Hölbl 1979b, 43–45).

The impressive necklace from Lefkandi constituted part of the rich assemblages of Near Eastern and Egyptian imports found in the late Proto-Geometric through Sub-Proto-Geometric tombs, which likely reached Lefkandi through the Levant. The necklace of lion-headed amulets can, therefore, be interpreted as an object of social prestige, which arose from its exotic origin. On the other hand, Euboean traders, through their intense overseas contacts with the commercial ports of Syro-Palestine, could have become familiar not only with Egyptian faience amulets, which were disseminated in these areas since the NK (Hermann 1994, 146–47), but also with some of the religious connotations of the depicted deities.

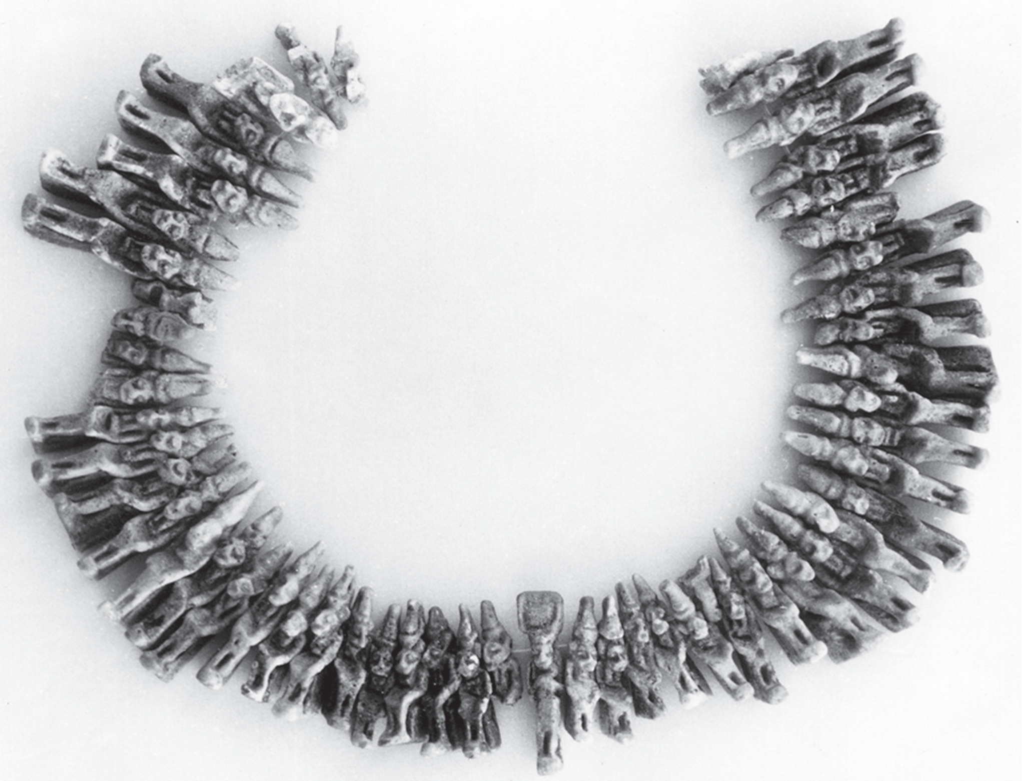


Figure 8.1. Faience necklace from Lefkandi, LEF 624_PhA 4004. © British School at Athens

Lion-headed figures also appeared in Crete during the Geometric Period. An amulet of Sekhmet was found in a very rich tomb (Tomb A1K1) in the necropolis of Eleutherna, a site in west-central Crete (Stampolidis and Karetsou 1998, 219) (Fig. 8.2). The tomb finds included dozens of funerary urns and a very rich collection of grave goods – weapons, jewellery, perfume vases, tripod or simple kraters, iron spits, *etc.* – dating roughly to the first quarter of the ninth century to the mid-seventh century BC (Stampolidis 2004, 123–24). The amulet of Sekhmet, which dates from 790–710 BC, was found in a cinerary urn along with other grave goods (Stampolidis 2004, 250; Stampolidis 2007, 58–60). The deity is represented in the standard iconographical pose, striding in front of a pillar, with her right arm parallel to her body. In her left hand she clasps a papyriform sceptre. The dorsal pillar bears an illegible inscription. Similar figurines of Sekhmet with illegible inscriptions have been found in Palestine (Hermann 1994, 162–63) and in the Phoenician sanctuary of Astarte at Kition, in Cyprus (Clerc *et al.* 1976, 149–50).

The discovery of Phoenician *cippi* in the cemetery of Orthi Petra at Eleutherna suggests that Phoenician traders or craftsmen had settled at Eleutherna (Stampolidis 2003, 221–26). The owner of this amulet could, then, have been a foreigner who had lived in Eleutherna, or a resident of Crete who had adopted some Egyptian ideas through travels to Syro-Palestine, or through contact with Phoenician settlers (Stampolidis 2007, 55–56). The anthropological study of Tomb A1K1 and the large number of weapons there indicate that the tomb included successive burials of warriors (Agelarakis 2005). As mentioned above, Sekhmet had been known in Syro-Palestine since the NK and was often assimilated with Astarte. It is the warlike character of Sekhmet that possibly makes this pendant an appropriate grave good in a tomb of warriors.

A faience figurine of a lion-headed goddess was uncovered within Temple B at Kommos, in southern Crete (Shaw 1980, 207–50; Skon-Jedele 1994, 1875–85; Stampolidis and Karetsou 1998, 98) (Fig. 8.3). Kommos was a thriving Iron Age port with connections to the Near East, as indicated by the presence of a significant amount of imported Phoenician pottery (Shaw 1989). The large figurine (15 cm) dates to *c.* 745–630 BC, a period corresponding to the second phase of the temple. The striding goddess is again represented holding a papyriform scepter in her left hand and an ankh symbol in her right. The mane of the lion-headed figure likely identifies her as Sekhmet. The crouching cat in front of her right leg is a standard representation of Bastet, with whom Sekhmet is assimilated in the Late Period, although the association of cats with lion-headed figures have also occasionally been identified with Sekhmet (Andrews 1994, 33–34; Malek 1993, 96).

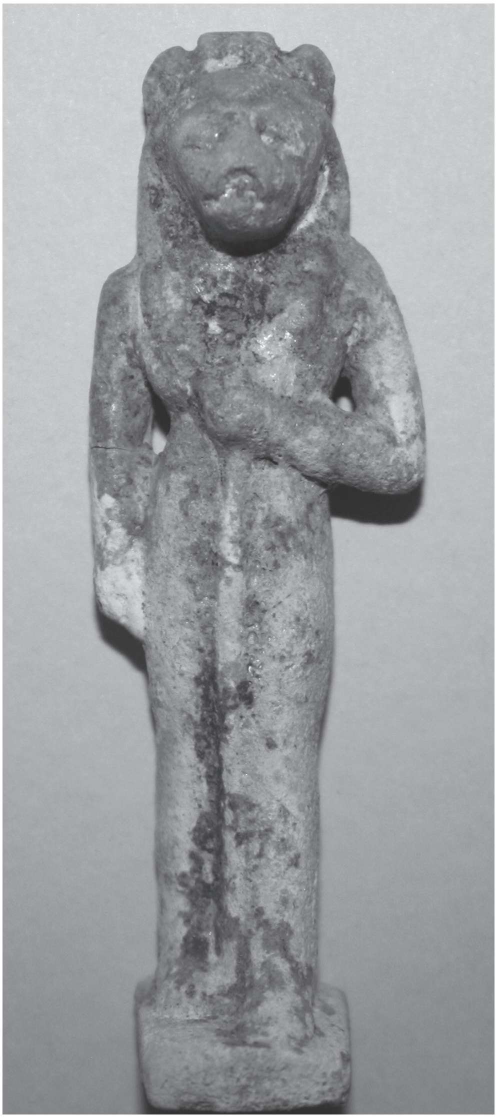
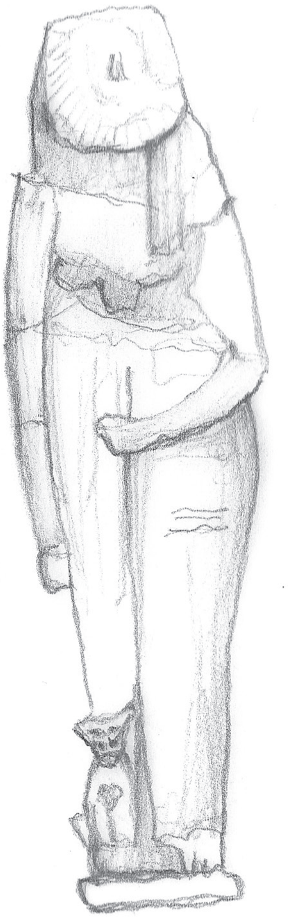


Figure 8.2. Faience amulet of the goddess Sekhmet from Eleutherna. © Prof. N. Stampolidis

The figurine was uncovered on top of a Greek bronze horse and between the central and south pilaster of a Phoenician tri-pillar sanctuary that had been set up within the Greek temple at Kommos. A figurine of Nefertum was also found between the central and the north pilaster of the same sanctuary. Since both figures were members of the Memphite triad, we may assume that they derived from a common place and that the dedicator knew their mythological association. It is possible that both figures were placed on the base of the pillar as a foundation deposit associated with the beginning of a new phase of the temple (Skon-Jedele 1994, 1879–1880). It has been suggested that the tri-pillar shrine might have been linked to the Phoenician divine trinity: Baal, Astarte, and Ashera (Shaw 1989, 182). As Sekhmet was assimilated with Astarte and both deities are depicted as leonine-headed, the Sekhmet figure in the shrine of Kommos may have served as a Phoenician counterpart of Astarte.



Sekhmet and Nefertem may also correspond to members of a Greek trinity of Leto, Apollo, and Artemis, who were portrayed symbolically by the three stone pillars of the shrine (Shaw 1980, 248). Herodotus (2.59, 2.137) considered Artemis to be the Greek counterpart of Bastet, whereas Nefertem could have been related to Apollo (Shaw 1989, 173). But the wide diffusion of Sekhmet and Nefertem within the eastern Mediterranean by Phoenicians during the Geometric Period weakens the theory of any particular importance for these objects in the Greek cultic environment.

Lion-headed figures were discovered at other sites in Crete. A fragmentary figure clasping a sceptre in front of its chest has been uncovered in a Proto-Geometric context in Tomb 9 at Fortetsa, in the cemetery at Knossos, along with a finger ring (Skon-Jedele 1994, 1859–1860, no. 2899; Coldstream 2003, 26). However, of greater importance are the upper part of a lion-headed goddess identified as Sekhmet and a fragmentarily preserved standing figure with a sceptre that can be identified as Sekhmet or Bastet, that were found in the sanctuary of Zeus Thenatas at Amnisos (Marinatos 2000, 337, 348, 350, nos. 374, 380) (Fig. 8.4). A partially preserved *protome* amulet of a lion or cat-headed goddess was also uncovered at Inatos Cave in Crete (Marinatos 2000, 342; Skon-Jedele 1994, 1792). The presence of Sekhmet or Bastet at this sites seems to complement a group of Egyptian deities and figures, such as Bes, Isis with Horus, as well as amulets of a monkey and of cats, all of which are closely associated with fertility (Skon-Jedele 1994, 1783; Webb 1978, 94–97, 104). The large number of animal amulets and scarabs found at Inatos, which appear to have been products of a Rhodian workshop (Skon-Jedele 1994, 1783; Webb 1978, 94–97, 104), suggests that Greek traders might have transferred these figures to Crete. The presence of these and similar artefacts in Crete has recently been ascribed to the Samians (Marinatos 2000, 337).

Figure 8.3. (top) Sekhmet figurine from Temple B at Kommos. © and sketch by V. Adamou, based on Stampolidis and Karetsou 1998, 219, no. 252.

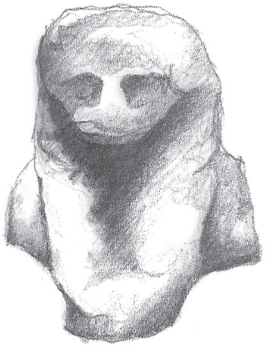


Figure 8.4. (bottom) Faience Sekhmet amulet from Amnisos. © and sketch by V. Adamou, based on Stampolidis and Karetsou 1998, 220, no. 253.

Although the provenance of some figures housed today in the museum of Rhodes is unknown, the greatest number of lion-headed figures discovered in Rhodes were found in the votive deposits of the sanctuaries of Athena at Lindos (Blinkenberg 1931; Skon-Jedele 1994, 2221–22), at Ialysos (Skon-Jedele 1994, 2432–42, 2449–53) and at Kameiros (Jacopi 1933, 302–03; Skon-Jedele 1994, 2016–18), all of which date to the seventh and sixth centuries BC (Fig. 8.5). Some of the pieces whose origins are unclear are similar to those from the votive deposit of Ialysos and were therefore likely found there. Sekhmet is most frequently represented standing upright or striding on a rectangular base and holding in her left hand a sceptre that terminates in a blossom. (Fig. 8.6). The types depicting a standing lion-headed figure with both arms hanging against the sides of her torso or an enthroned goddess with both hands held against the sides of her thighs are infrequent on Rhodes (Skon-Jedele 1994, 2439).

Of special interest is an amulet of blue compound representing the goddess crowned with two plumes and standing on a dorsal pillar which bears the inscription: '*Dd mdw jn sxmt nb jm anx wDA s*'. These are words spoken by the lady Sekhmet herself: 'Give Life, Prosperity, Health' (Skon-Jedele 1994, 2432–33). A probable syncretistic type of Sekhmet-Mut (Andrews 1994, 34) might have been reflected – as in the case of Lefkandi – in the representation of a lion-headed figure wearing the double crown and *uraeus* (Skon-Jedele 1994, 2439–40). An incised representation of a lion-headed goddess on the dorsal pillar of amulets of Nefertem from the acropolis of Kameiros is found today at the British Museum (Skon-Jedele 1994, 2007, nos. 3048–3051). A similar figure was found in a cremation burial near Ialysos (Jacopi 1929, 50; Skon-Jedele 1994, 2339).

Heads with so-called aegis amulets have been also been excavated from the votive deposits of the sanctuary of Athena at Ialysos (Skon-Jedele 1994, 2449–53) and Kameiros (Jacopi

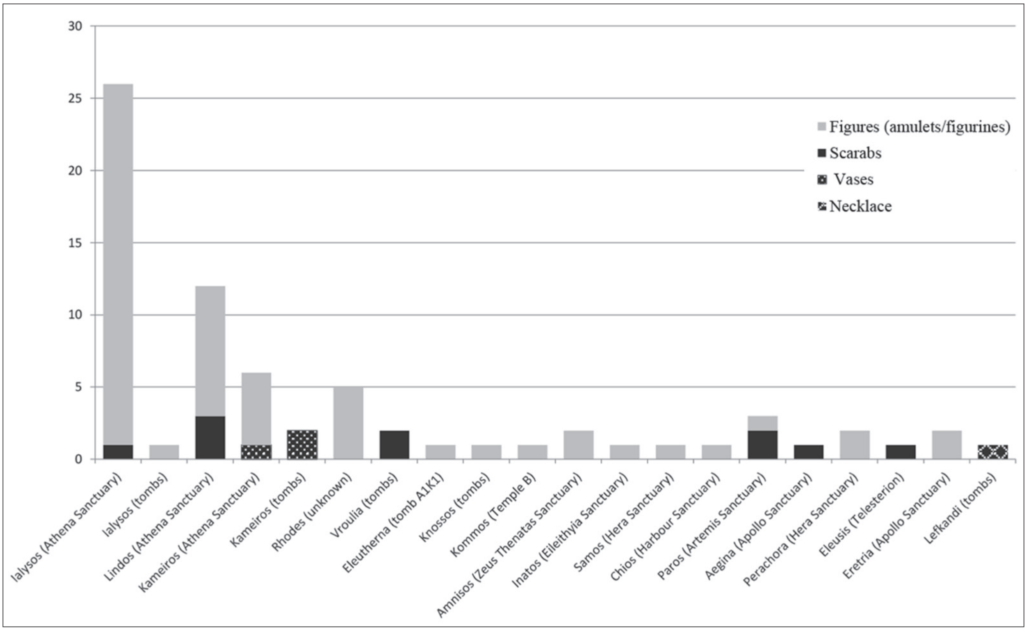


Figure 8.5. Preliminary statistical diagram showing the geographical distribution of lion-headed figures in the Aegean during the early Iron Age.

1933, 319–320; Skon-Jedele 1994, 3077). Two Sekhmet heads with aegis amulets have also been unearthed at the sanctuary of Hera in Perachora (James 1962, 512; Skon-Jedele 1994, 441) and another at the Heraion of Samos (Parlasca 1953; Skon-Jedele 1994, 1563–64) (Fig. 8.7). These objects depict the lion-headed goddess wearing a collar decorated with two or more concentric zones of beads in low relief and are surmounted by a sun disc and *uraeus* crown, and were most likely symbols of regeneration (Clerc *et al*. 1976, 131). Even though the aegis is a standard iconographical element of Bastet, when the lion-headed aegis is crowned with the solar disc, it might also represent Sekhmet . Many examples of this type are dated from the 22nd–26th dynasty (Petrie 1914, 42, pl. 35, 195a–d; Reisner 1958, pl. VII, nos. 12732–40).

Sekhmet figures have been also found in the sanctuary of Artemis at Paros (Rubensohn 1962, 77, 169), and at the sanctuary of Apollo at Emporio of Chios (Boardman 1967, 241; Skon-Jedele 1994, 1057–58). These figures would most likely be redistributed from Rhodes towards the other islands, as indicated by their context including artefacts of the East Greek faience workshop.

A lion-headed figure identified with Sekhmet also appears on faience vessels produced in the workshop on Rhodes. A faience juglet with aqua glaze dating to 630–600 BC (Fig. 8.8), unearthed in a chamber tomb at the site Papatisloures, near Kameiros, depicts a lioness head in profile wearing a thick wig, a sun-disc crown and a broad beaded collar composed of six semicircles (Jacopi 1933, 91, 97–98; Skon-Jedel 1994, 2143–44). Webb (1978, 69) assigned this vase to the local workshop of trefoil-lip juglets. The role of Sekhmet on these juglets seems more likely decorative and it could be associated with the predominance of wild animal friezes in the Greek iconographical repertoire during the Archaic Period. The above mentioned amulets of Sekhmet heads with aegis may have inspired these local representations.

Lion-headed figures appear also on scarabs found mainly in sanctuaries. The distinction between Sekhmet

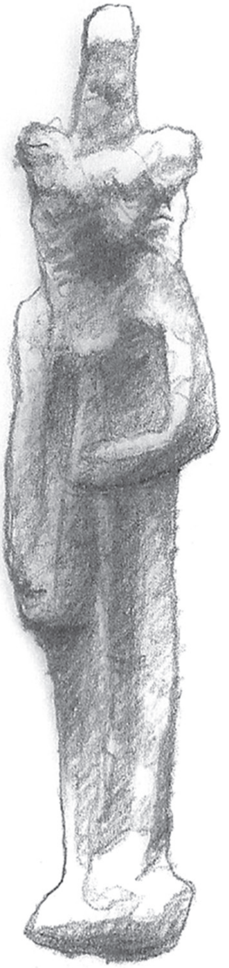


Figure 8.6. (top) Faience Sekhmet amulet from Kameiros. © and sketch by V. Adamou from Stampolidis and Karetsou 1998, 220, no. 254.

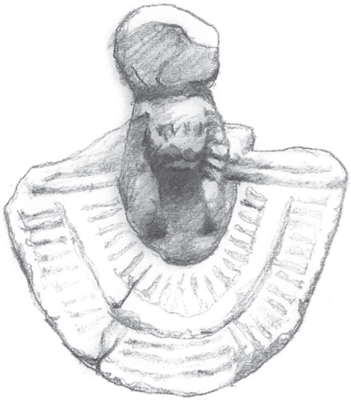


Figure 8.7. (bottom) Sekhmet with aegis amulet from the Heraion at Samos. © and sketch by V. Adamou, based on Parlasca 1953, pl. 11.

and Bastet in these cases is more difficult to determine. A goddess identified with Sekhmet is seen on a scarab of blue frit and mounted in a band of silver for attachment to a finger ring found in the archaic context of the Acropolis of Lindos (Fig. 8.9) (Blinkenberg 1931, 378; Skon-Jedele 1994, 2249–2250). The goddess is depicted with a seated griffin in the middle register, under a cartouche inscribed with the name men-ka-Ra. This scarab would have been manufactured in an Egyptian workshop in the Nile Delta (Gorton 1996, 82–85).

The votive deposit of Athena Lindia yielded a scarab depicting Sekhmet holding a papyriform before a kneeling pharaoh holding the *psent* and a libation vase (Blinkenberg 1931; Skon-Jedele 1994, 2291–92). Above the scene is a couchant lion and underneath a basket sign. Similar scarabs with Bastet or Sekhmet and a figure of a pharaoh worshipping the deity have been found at Carthage (Vercoutter 1945, 192, 435–437), and at Ischia in Italy (Hölbl 1979b, 178–179). This scene is typical in Egyptian scarabs of the 22nd–25th dynasties (Hölbl 1979b, 172; Petrie 1914), however, Gorton suggests that the scarabs of this type could have been the product of a workshop located on Rhodes or Cyprus (1996, 23).

Outside Rhodes and Crete, scarabs depicting lion-headed deities are limited. A scarab depicting the goddess standing between the throne name *men-kheper-Ra* and a kneeling pharaoh crowned with a *uraeus* and offering a *hs* vase comes from the votive deposit of the Artemis Sanctuary in Paros (Rubensohn 1962, 73; Skon-Jedele 1994, 1388). The scarab was part of a necklace made out of twenty-three scarabs and a *wedjat* amulet, which was found under a paving slab of the floor of the temple (Skon-Jedele 1994). An almost identical scene is depicted on a scarab from Ischia (Buchner 1993, 787). This necklace probably would have adorned the cult statue of the goddess Artemis (Rubensohn 1962, 79). It might have been produced on Rhodes or Cyprus, where limestone statuettes of women adorned with necklaces of this type have been uncovered. These scarabs were widely distributed in Greece

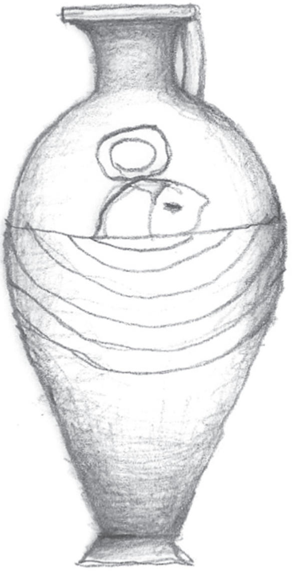


Figure 8.8. Faience juglet with representation of a lion-headed figure from Kameiros. © and sketch by V. Adamou, based on a drawing in Skon-Jedele 1994, 2810.

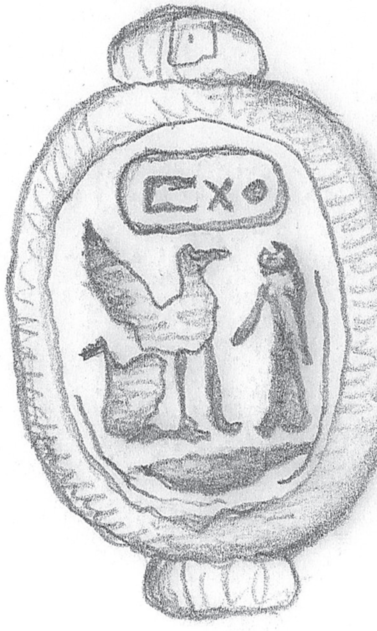


Figure 8.9. Scarab from Lindos. © and sketch by V. Adamou, based on a drawing in Skon-Jedele 1994, 2815.

and in the Phoenician world. They must be considered authentic Egyptian imports, since they have close parallels with scarabs of the 18th dynasty discovered in Egypt (Gorton 1996, 20)

Historical contextualisation

The significant percentage of lion-headed figures found in the Aegean, especially in Rhodes during the early Iron Age can be better understood if associated with the commercial and cultural networks reactivated after the Dark Age, mainly as a result of intense Phoenician and Cypriot trade in the south-eastern Mediterranean (Malkin 2011; Stampolidis 2003; Veleni and Stefani 2012).

One of the most common trade routes used in the Early Iron Age connected Egypt with the Syro-Palestinian coast, Cyprus, Asia Minor and the Dodecanese. From there the route could branch northwards leading to the eastern Aegean or via the Cyclades to mainland Greece or continue south to Crete. Crete was also connected, via different routes, with the Cyclades, Cythera, the Peloponese, and through the Ionian Islands, with South Italy, Sicily and Sardinia (Stampolidis and Karageorghis 2003, 43ff.).

Phoenician commercial activity in the Aegean has been testified archaeologically mainly on Crete and in the Dodecanese, but also in the northern Aegean, Cyclades and in Attica (Stampolidis 2003, for further bibliography). The similarity of certain shapes of Rhodian pottery to Phoenician prototypes led some scholars to believe that the Phoenicians established a workshop on Rhodes, and perhaps even a settlement at Ialysos (Coldstream 1969; Kourou 2003, 252–53). The discovery of Cypriot pottery and local imitations in burial contexts of the ninth-century along with Cypriote statuettes with Phoenician inscriptions suggests equally close contacts and influence from Cyprus (Kourou 2003, 250–255).

The late seventh and sixth centuries BC, however, were also a period of significant contact between the Egyptians and the Greek World (Malkin 2011, 81–87). Herodotus' references (2.152–54) about the Greek Ionian and Carian mercenaries' support of Psammetichos I, the movement of the 'camps' near Memphis by Amasis II, and the founding of Naukratis (2.178), have been thoroughly discussed and do not require further analysis here (Malkin 2011, 81–95; Villing 2006). Herodotus (2.178) mentions that Amasis sent royal gifts to the temple of Athena at Lindos (2.182) and that the Rhodians participated in the construction of the Hellenion at Naukratis. Furthermore, references to Kolaios' journey (4.152), the construction of a Heraion by the Samians at Naukratis (2.178), and the famous alliance between Amasis and Polycrates (2.182) indicate direct commercial, diplomatic and cultural relations between Egypt and eastern Greece during the Saite Dynasty. Possible Egyptian influences in technology, monumental architecture and sculpture of the Archaic Period have been thoroughly studied and, to a great extent, have been confirmed (Villing and Schlotzhauer 2006, 8). It has been suggested that Greek and Carian soldiers living in Egypt could marry native women, participate in the Egyptian cults, adopt Egyptian names, and even follow Egyptian funerary traditions (Höckmann, xi–xii; Villing and Scholzhauer, 7–8). Thus, physical coexistence of Greeks and Egyptians in Egypt and intense cultural interaction between East Greece and Egypt would have led Greeks to become familiar with some Egyptian religious ideas. Stories and magical practice could have been even transmitted through traders, itinerant magicians or artisans working together on the production of figures and scarabs at the faience workshops of Rhodes or Naucratis.

Owners and dedicators of lion-headed figures

The quantity of representations of Egyptian deities on Rhodes, as well as the close morphological affinities with works from the west, suggest that due to its significant strategic position, this island functioned as a redistribution centre for these artefacts within the Mediterranean during the seventh and sixth centuries BC. Egyptian statuettes with Greek inscriptions found at sanctuaries in eastern Greece (*e.g.* a statuette dedicated by Pedon at Priene and by Smyrdes at Kameiros) imply that the owners/dedicators may have been Greek traders, craftsmen or mercenaries returning home (Kourou 2003, 254; Villing and Schlotzhauer 2006, 8).

It has been suggested that the introduction of amulets into the Aegean tracks the presence of Egyptian or Syro-Palestinian craftsmen, healers, seers, and magicians, who, spread magic spells and other stories that may have been incorporated later into the Greek mythological tradition (Burkert 1992; Marinatos 2000, 184–85). Greek familiarity with Egyptian magic, especially with healing rites, can be confirmed by ancient literary sources (Homer, *Od.* 4.221; Herodotus 2.181).

Conclusions

Investigation of the archaeological and historical context of the lion-headed representations – most of which have been identified with Sekhmet – found in sanctuaries and tombs of the Aegean indicate that they were not only products of trade or exotic trinkets bringing good luck, but in some cases they also functioned as a means of transmitting Egyptian religious and magical ideas within the Greek World. In Crete, especially at Eleutherna and Kommos, knowledge about the functions of Sekhmet or Bastet could have been transmitted through Phoenician traders or settlers during the eighth-century BC. The Memphite triad were well known to the Phoenicians. At the sanctuaries of Eileithyia at Amnisos and Inatos, the discovery of lion-headed goddesses among an assemblage clearly associated with fecundity may imply that the dedicators were aware of the protective and maternal aspects of these deities. This knowledge could have been transmitted through contact with Rhodes or Samos, as indicated by the presence of Egyptianising imitations, probably manufactured in the East Greek Faience Workshop. Regarding the archaeological context, it is notable that these figures are more frequently found at sanctuaries of Athena, Artemis, and Hera, deities with a complex character – they are aggressive but, at the same time, protective. It is remarkable that the polysemic character of the lion-headed goddess Sekhmet is compatible with the dual nature of these Greek deities. The great number of Sekhmet figures on Rhodes, which date mainly to the seventh and sixth-centuries BC, is in line with the generally high proportion of *Aegyptiaca* found on the island, and can be explained by the intense commercial, political and diplomatic relations between eastern Greece and the 26th dynasty. Sporadic finds of objects depicting Sekhmet in Aegean tombs suggests that her funerary connotations were unknown. The intense contact between Egypt and eastern Greece during this period, and the strong presence of Greek mercenaries at Memphis and other sites of the Nile delta, where the cult of Sekhmet-Bastet was popular, testify that some of the apotropaic/protective/healing aspects of the Egyptian lion-headed goddesses could have been known at least by a specific part of Greek population, such as traders, craftsmen or women. Greek mercenaries participating in the Egyptian army could have worn these pendants, hoping for the protection of the warlike goddess. After their return to their homeland they may have dedicated them to deities of similar character, such as Athena. The depiction of Sekhmet's head on New Year's flasks and juglets of the East Greek Faience Workshop suggest that her apotropaic role during the Egyptian New Year period might have also been known. Thus, Herodotus' (2.59, 2.137) later equation of Artemis and Bastet, the alter-ego of Sekhmet, based on the well-known *interpretatio graeca,* may not reflect the existence of religious syncretism, but it certainly assumes an audience already familiar with and open to some Egyptian popular beliefs.

Acknowledgments

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9

Foreign Influence in the Late New Kingdom and the Third Intermediate Period

Edward Mushett Cole

Introduction and historical background

During the late New Kingdom and the Third Intermediate Period, ancient Egypt experienced increasing influence from outside the Nile valley, culminating in the rule of Libyan and Kushite kings. At the height of these foreign influences, during the Libyan 21st, 22nd, and 23rd dynasties (*c*. 1077–734 BC), there was increasing political fragmentation, culminating in numerous kings, Great Chiefs, and others ruling from different towns throughout the Nile Valley. Many of these rulers also adopted full royal style, in marked contrast to previous periods of division. Recently, this fragmentation has been increasingly seen, although not by all (O'Connor 1990), as a product of the Libyans' probable background as a group of nomadic tribes. Such a tribal background is used to explain how it was possible for an increasing number of rulers to adopt Egyptian royal iconography while still seemingly able to co-exist peacefully (Leahy 1985, 58). There also continues to be only limited evidence for the structure of Libyan society before their arrival in Egypt and rise to power (Leahy 1985, 52; Ritner 2009a, 329). Utilising an inter-disciplinary approach, this paper will examine whether the supposed effects of this foreign rule, in particular the political fragmentation, can be ascribed to the 'tribal' background of the rulers of this period and their apparent lack of assimilation. It will also ascertain if these changes should instead be ascribed to alternative causes, using observations on societal structure drawn from other subjects. As a result, this paper will also seek to refine the understanding of the political processes that occurred in the Libyan Period.

From the monumental record of the two Libyan invasions under Ramesses III and the later documents detailing the arrival of smaller groups, it is clear that there were an increasing number of Libyans moving into Egypt during the 20th dynasty. These were mostly concentrated in the western Delta (Leahy 1985, 55), but there is evidence from Deir el-Medina and in the Harris Papyrus for the appearance of Libyans in the Theban region and elsewhere in the Nile Valley (Haring 1993, 162; Grandet 1994, 305). These appearances were combined with the practice of settling captured prisoners in fortresses and forming them into units of the Egyptian army; specifically mentioned by Ramesses III in P. Harris after his victories over the Libyan invasions during his reign (Peden 1994, 217). It has been suggested this created a large Libyan population within Egypt who were not as thoroughly Egyptianised as other previously captured peoples had been (Leahy 1985; Jansen-Winkeln 1994; Ritner 2009a; Broekman 2010).

Whilst Libyan individuals appear amongst the elite from the end of the 20th dynasty, visible in the names of some of Herihor's children on the walls of the temple of Khonsu at Karnak (Kitchen 1986, 253 n.251), it was not until later in the 21st dynasty that the first clearly Libyan king appeared, Osorkon 'the Elder'. This was quickly followed by the 22nd dynasty, the first fully Libyan dynasty. The political divisions visible under the early 21st dynasty and the later 22nd and 23rd dynasties are seen to be either a product of a lack of assimilation by the Libyans (Leahy 1985, 59; Jansen-Winkeln 1994, 95; Jansen-Winkeln 1999, 19–20; Broekman 2010, 91), or the breakdown of the political system of the New Kingdom (O'Connor 1983, 232; Hüneberg 2003, 73–74). It is clear for both explanations, however, that the Egyptian concept of a sole king was unimportant for the elite of this period.

Under the early 21st dynasty, despite Herihor, Pinudjem I, and Menkheperre's adoption of royal style, the concept of sole rule still seems to be maintained, with the northern kings often acknowledged in the south and with the two halves being reunited by the reign of Amenemope (Kitchen 1986, 272). Despite this reunification under the late 21st and early 22nd dynasties, from the middle of the 22nd dynasty onwards there were an increasing number of kings, great chiefs and chiefs of the Ma. Unlike previous periods of division, such as the First Intermediate Period (see Morris 2006, 59), the different regions seem to have coexisted peacefully and there was no apparent restriction on members of the elite becoming kings. This radical change to the concept of kingship is clearly visible on the statue of Nakhtefmut, which recorded the titles of the king Horsiese (A), who granted him the statue, and those of his contemporary Osorkon II, with no signs that this was a problem (Broekman 2010, 91). By the time of Piankh's invasion in 734 BC which brought the Libyan Period to an end, he was able to record four kings at Hermopolis, Herakleopolis, Leontopolis, and Tanis, along with a number of great chiefs and chiefs of the Ma and Libu (Grimal 1981, 1–3).

Evidence for the continuation of Libyan identity

Although ethnicity is difficult to detect in the archaeological record, it can be visible through the maintenance of specific cultural markers such as names, new artistic conventions, and burial traditions. These define the boundaries between different ethnic groups (Barth 1969, 14) and can thus be used to assign ethnic identity to individuals in the past. Whilst it has been suggested that the retention of ethnicity was a product of political considerations rather than as a reflection of cultural differences (Baines 1996, 381), it has been demonstrated in wider studies of ethnicity that ethnic identities can only be preserved if there are 'persisting cultural differences' (Barth 1969, 15). For example, the Nubian-style pottery and burials found at New Kingdom Nubian sites, in particular Askut and Tombos, demonstrate a continuation of cultural traditions viewed as marking a Nubian ethnic identity despite Egyptian control and settlement (Tyson Smith 2013, 88–89). As such, for the purposes of this paper, I will view markers of ethnic groups as also demonstrating cultural differences between that group and the Egyptian ethnic and cultural identity.

Along with the apparent changes to the concept of kingship during this period, it is clear that there was a considerable retention of Libyan culture in names, titles, and in aspects of depictions of individuals into the Kushite Period (Leahy 1985, 57; Ritner 2009a, 332). The most significant of these is the use of Libyan titles by kings and much of the elite (Leahy 1985, 54–55; Jansen-Winkeln 1994, 93). Unlike previous groups of foreigners who had adopted Egyptian names and given them to their children, thereby integrating themselves into the wider population, Libyans continued using Libyan names up to the Saite Period (Leahy 1985, 55). Names, however, cannot provide an absolute correlation between an individual and their possible ethnic identity. Still, the use of Libyan names, particularly those not used by the kings, retain importance as a cultural marker of Libyan ethnicity as there would have been little incentive for Egyptians to adopt a Libyan name (Leahy 1985, 54).

This persistence of Libyan culture is also visible in the continuation of Libyan titles, such as great chief and chief of the Ma or Libu, which are present throughout the Libyan Period (Leahy 1985, 57) and are also often deemed more important than an individual's Egyptian titles (Ritner 2009a, 336; Broekman 2010, 90). Such changes are clearly visible on Pediese's Serapeum stela where he not only takes the place of the king, but has himself depicted with only his Libyan titles and attributes, relegating his title of High Priest of Ptah to his son Peftjauwawybast (Ritner 2009b, 288–290). This process is even apparent at the top of the Egyptian hierarchy, with Osorkon II wishing his sons to become 'Great Chiefs', an unusual desire for an Egyptian king whose sons would have already been socially much higher than such chiefs (Lange 2008, 139; Ritner 2009a, 336). This statement gives a clear indication of the change in importance of Egyptian kingship in relation to the Libyan hierarchy during the Libyan Period.

Even those rulers, or members of the elite, who did not adopt royal style appear to have appropriated a number of royal prerogatives. This is clear from the donation stelae of the later Libyan Period which, although still dated to a king's reign, depict the local Libyan ruler in the traditional place of the king (Leahy 1985, 59; Jansen-Winkeln 1999, 17; Ritner 2009b, 77–78, 104, 388,). The loss of significance of the king is also clear from the importance of genealogies demonstrating an individual's inheritance of their titles from their ancestors *e.g.* S. Louvre IM 2846, CAT. No. 31, Berlin 23673, and Chicago OIM 10729 (Ritner 2009b 17–20, 21–25, 25–31); showing that most titles continued to be inherited, despite the early 22nd dynasty's practice of appointing sons to senior positions.

Other 'Libyan' elements also appear to confirm the retention of an ethnically Libyan identity by the elite during the Libyan Period. Despite being depicted with traditionally Egyptian features, there are a number of items which are added to their representations which do not conform to any form of Egyptian depiction, particularly that of wearing an ostrich feather on the head (Leahy 1985, 57). There are also changes to general cultural practices which reveal wider effects of Libyan influence, with 'family' burials becoming increasingly common along with burials within the temple precincts like the royal tombs at Tanis (Leahy 1985, 61; Jansen-Winkeln 1994, 95–86). Finally, there is the appearance of long genealogies on statuary and stelae, often demonstrating that an individual's ancestors had held the same titles and positions, for example those of Basa (Ritner 2009b, 25–31), the Memphite priests (Ritner 2009b, 21–25), and most importantly that of Pasenhor (Ritner 2009b 17–20). Such genealogies are almost entirely unknown from Egypt prior to the Libyan Period and so reflect a clear cultural impact of the Libyan's rise in power. These genealogies are understood as reflecting the importance for the Libyan elite of demonstrating their lineages, something common to many tribal societies (Leahy 1985, 55; Ritner 2009a, 335; Broekman 2010, 86).

The fact that many of the Libyans were former prisoners-of-war, who were settled in forts together as part of the Egyptian army, would have made it much easier for them to maintain their ethnic identity (Leahy 1985, 56; Jansen-Winkeln 1994, 88; Ritner 2009a, 332), as often happens when a distinct ethnic group clusters together within a different society (Duncan and Waldorf 2009, 11; *The Economist* 2013; Special Report, 11). This is particularly true if

Ritner's retranslation of the relevant section of Papyrus Harris is correct, 'I settled their leaders in strongholds in my name. I gave to them captains of archers and elders of the tribes' (2009a, 332). This was probably assisted by continued low level migration into the western Delta and Nile Valley via the oases throughout the twentieth dynasty, as is clear from the number of reports of Libyans or 'foreigners' in the Deir el-Medina journal (Haring 1993, 160–161; Vernus 2003, 6), and into the Libyan Period (Leahy 1985, 55). As the Libyans gained political power and wealth this would have increasingly weakened any incentive to adopt Egyptian culture in order to secure such advantages (Leahy 1985, 56; Baines 1996, 380).

Libyan society: Theory of limited Libyan influence on Egyptian cultural practices

Despite such evidence for the influence of the Libyans on Egyptian cultural practices and political structure, several scholars have argued that the Libyans' ethnicity has little to do with the fragmentation visible in the Libyan period. Instead they see Libyan society as becoming increasingly complex during the later New Kingdom, in part through increased contact with Egypt, and therefore have argued that Libyans would not have had a 'tribal' governmental system to bring with them when settled in Egypt (O'Connor 1983, 1990; Hüneberg 2003, 67–68; Moreno Garcia 2013, 97). Using anthropological studies of nomadism these scholars have attempted to explain the structure of Libyan society before they arrived in Egypt. Whilst accepting that the Libyans were at least semi-nomadic, O'Connor (1990), and recently Hüneberg (2003), see Libyan society beginning to develop into a 'nomadic state' (Khazanov 1984, 228–233; O'Connor 1990, 106–107) prior to their arrival into Egypt. This 'nomadic state' has more rigid social hierarchies than other 'nomadic' forms of society and is seen to be led by 'Paramount Chiefs', a single leader with many other chiefs ruling sub-divisions of the society below him. These chiefs are equated with the named leaders of the various Libyan invasions during Merneptah's and Ramesses III's reigns. Indeed, the presence of such chiefs and their need to maintain their authority has been suggested as one of the causes for the Libyan invasions of Egypt (O'Connor 1990, 107). The rule of such 'Paramount Chiefs' is often feudalistic in nature (Khazanov 1984, 298), reliant on the support of lower chiefs who have their own forces, and is highly dependent on the individual ruler's ability to retain control. This structure can be seen in the known 'Paramount Chiefdoms' of Hawaii where each Hawaiian island had a single paramount who had lesser chiefs beneath him (Earle 1997, 35–36). Following the theories of Khazanov, who views nomadic societies as adapting to contact with sedentary societies by developing more social differentiation (1984, 198–227), this political development is understood to be as a result of contact with the settled society of Egypt (O'Connor 1990, 108).

This increased complexity and the development of an institutionalised hierarchy has lead Hüneberg (2003, 68–69) to argue that the Libyan elite were quite Egyptianised by the time they came to power, particularly those who were 'indoctrinated' as prisoners of war by Ramesses III. Following this scenario, such placement of members of the royal family ultimately led to the establishment of sub or rival dynasties in those positions and dividing the country into many different territories (O'Connor 1983, 240–241) and was not, therefore, a product of the Libyan's level of Egyptianisation. Despite O'Connor and Hüneberg's argument regarding the level of Egyptianisation, elements of the system of 'Paramount Chiefs' can be suggested as appearing in the Libyan period with the appearance of multiple rulers who all acknowledge one as being their technical superior, but only from the reign of Osorkon II onwards. Shoshenq I, and the first few Libyan kings, successfully established their authority over the country by placing members of the royal dynasty in senior positions as a way of ensuring their retention of control. This created conditions similar to 'Paramount Chiefs' by monopolising power under the control of a single family (O'Connor 1990, 104). Indeed, the choice by the High Priest of Amun Osorkon 'B' to date some of the donations at the end of the Chronicle of Prince Osorkon to the reign of Shoshenq III rather than either of his rivals (Ritner 2009a, 373–375) strongly suggests that there may have been a single ruler who was perceived as being, at least nominally, the superior of the other Libyan rulers. Such an interpretation of the record in the chronicle of Prince Osorkon finds parallels in the integration of a tribal political system in the second millennium BC state of Mari in Syria. The archives at Mari record a complicated tribal structure with two main tribal confederations, the Sim'alite and Yaminite, subdivided into smaller groups all of which had their own leaders, but who also acknowledged the authority of single king, Zimri-Lim (Fleming 2004, 230–231). Such an example certainly finds resonance with the political situation in the Libyan period.

A significant issue with this explanation for the fragmentation in the Libyan Period is that the placement of members of the royal family in positions of power had occurred throughout the New Kingdom, particularly under Ramesses II (Dodson 2010, 170–175), but also under the twentieth dynasty (Hüneberg 2003, 69). In both of these cases there is no evidence for this policy's supposed collateral effect of political fragmentation. There must, therefore, have been a new factor present in the Libyan Period that gave the sub-dynasties the ability to resist central control. It is here that O'Connor, supported by Hüneberg, sees the Libyans' military background as important. The Libyans' integration into the Egyptian army after their capture, which had allowed their rise in the first place (O'Connor 1983, 238–239; Hüneberg 2003, 73), also meant that they had control of troops, providing each of these rulers with the means of resisting each others' authority and asserting their own within their domains (Hüneberg 2003, 74). This description has clear parallels with Dodson's (2010, 42–43) analysis of Amenmesses' rebellion at the end of the nineteenth dynasty, particularly his removal from office as Viceroy of Nubia by Merneptah in Year 7/8 in order to prevent a close member of the royal family from having access to a force with which to challenge the king. In this case it was too late, as can be seen from Amenmesses' control of Upper Egypt for four years of Sety II's reign. This example suggests that the spread of military power away from sole control by the king is a plausible scenario for the mechanism behind the political fragmentation under the 21st, 22nd, and 23rd dynasties.

It does not, however, satisfactorily explain why a number of rulers are able to adopt royal attributes and yet peacefully rule concurrently, an element not normally present in recorded 'Paramount Chiefdoms'. For example, those recorded for in the Hawaiian Islands, where violent competition and warfare between the different islands Paramount Chiefs in competition for the position of Paramount Chief of all Hawaii was common (Earle 1997, 132). It is also unlike previous periods of fragmentation within Egypt (Leahy 1985, 58) including Amenmesses' rebellion, where the civil war between him and Sety II was to establish *who* was king, not *where* they were king. Most importantly, however, viewing the fragmentation as a result of the appointment of members of the royal family to senior positions forces us to ignore the clear Libyan influence in the 21st dynasty, as noted in the section above, along with the evidence that many perspectives of important Egyptian traditions had already changed by this point, demonstrated by the first records of Shoshenq I in the Karnak Priestly Annals, recording him not as king, but as a 'great chief of the Ma' and without a cartouche (Ritner 2009b, Text 4:

1–3). There also continues to be only circumstantial evidence for the ‘Paramount Chiefs’ from O’Connor’s ‘nomadic state’ reconstruction (1990), either in Libya or in Egypt (Ritner 2009a, 330–332). The reference to named chiefs leading the Libyans is more a reflection of sedentary societies’ desire to recognise defined leaders in their opposition (Sahlins 1968, 38), and thus was probably more important to the Egyptians than the Libyans. This is reflected in their rejection of Ramesses III’s attempt to install a ruler over them (Ritner 2009a, 331; 334).

Libyan society: Theory of extensive Libyan influence on Egyptian cultural practices

The alternative explanation is based on the recognition that many of the changes visible during the Libyan Period reflect a very different societal structure for the Libyans before they arrived in Egypt, because they retained not only elements of their ethnicity but also their sense of societal structure. That the evidence of Libyan influence on Egypt might reveal their social structure prior to their arrival in Egypt is demonstrated by ethnographic studies carried out elsewhere in the Near East. For example, those carried out by van der Steen (2007, 3) who noted that on the Kerak Plateau although the towns acted as the political centres of the region, they had the internal organisation and hierarchical structure of the tribes that existed on the plateau.

A key part of this evidence for Libyan social structure are the references to brothers or ‘brotherhood’ in Libyan Period texts, such as Osorkon I’s block from Tell Basta, or Osorkon II’s prayer to Amun (Lange 2008, 137; Ritner 2009b, 283–288; Broekman 2010, 87). These suggest the existence of ‘classificatory kinship’ amongst the Libyans, where relatives at the same kinship level in a descent group are deemed to be equivalent and to hold the same social status (Middleton and Tait 1958, 7; Sahlins 1968, 11; 21). This results in brothers, cousins, and even distant relatives treating each other as brothers whilst being on the same social level, with each being the head of a politically equal descent group (Ritner 2009a, 333). Whilst a parallel can be drawn with the use of the term ‘brother’ to denote perceived social equality in the international correspondence from Amarna (Kemp 2006, 291), it is important to note that in the Libyan Period those referred to as brother were related, however distantly. Despite rejecting the presence of ‘tribal’ influences in the Libyan Period, Hüneberg has noted that the best explanation for the peaceful co-existence is that a ‘balance of power’ exists between the different sections, preventing reunification (2003, 70–74). His description, however, reflects the structure of equality between lineages where each segment is considered politically equal to others at the same kinship level (Middleton and Tait 1958, 7; Sahlins 1968, 21). The social equality between brothers also explains the sudden expansion in the number of examples of brother-brother succession, such as between the High Priest of Amun in the 21st dynasty, with Pinudjem I’s sons systematically inheriting the position (Broekman 2010, 89–90). This increase, and thus the sudden importance of brother-brother succession, is probably because there is less risk of fragmentation between brothers than with extended kin (Broekman 2010, 88). Similar to the references to brotherhood, the aforementioned importance of genealogies recorded on statues and stelae is another supporting factor to consider (Lange 2008, 140; Ritner 2009a, 335). This evidence strongly suggests that the concept of lineage remains significant for Libyans in Egypt, and has led to the proposal of a model of a ‘segmentary lineage system’ (Middleton and Tait 1958, 6–8; Sahlins 1968, 15–27) for the structure of Libyan society, both before and after their arrival in Egypt (Ritner 2009a, 334–335).

In this model each lineage is sub-divided into smaller descent groups, each of which is in constant competition for status with the others (Middleton and Tait 1958, 6; Sahlins 1968, 15). One of the key reasons for describing the Libyans' political structure as formed of segmentary lineages is that such a system is inherently unstable (Sahlins 1968, vii–viii, 51). Whilst groups can coalesce into larger units in response to or against particular events, this is only temporary and they are also likely to subdivide into smaller groups (Baştuğ 1998, 103). This would appear to provide a clear explanation for the fragmentation under the Libyan kings, with each segment asserting its independence through control of a particular territory. It also suggests a possible motivation; with each of these segments in constant competition with the others, it was important for each one to establish their significance and status by installing themselves as rulers of a distinct territory. That this structure is maintained after the Libyans come to power in Egypt is supported by the retention of lineage titles such as 'great Chief' or 'chief of the Ma/ Libu' (Ritner 2009a 336; Broekman 2010, 86). In the case of the Libyans, each of these segmentary units was led by a 'chief' or a 'great chief', making these titles markers of the lineage rather than specific political positions and thus perhaps explaining why the Libyan kings see them as important titles for their sons to inherit (Broekman 2010, 86–87) and why the king is increasingly only first amongst equals (Leahy 1985, 59; Jansen-Winkeln 1994, 19–20).

That these titles imply lineage rather than administrative positions is strongly suggested by the lack of evidence to indicate that an individual was ever appointed to one. Instead, they were seemingly always inherited from a close relative. Such a lack of control over lineage positions and, indeed, over those who held them again has parallels with the 'tribal state' of Mari under Zimri-Lim. He was also not consulted about the appointment of the heads of the various segments of the two tribal confederations, and particularly for his own Sim'alite confederation where two *Mergûms* (the leaders of the pastoralist segments of the confederation) viewed themselves as almost being his equal (Fleming 2004, 75; 78–80; 168). This is very similar to the apparent attitudes of the later Libyan rulers to one another and particularly amongst those who had adopted Egyptian kingship.

Indeed, the socio-political organisation of Mari has strong similarities with Libyan rule, with both the Sim'alite and Yaminite segmentary groups appointed their own leaders (*sugagum* for the Sim'alites and 'kings' for the Yaminites) who acknowledged Zimri-Lim's authority over them, although this was more a factor of military power than the ideological influence of his position as king (Fleming 2004, 24). It is this aspect that appears to have the strongest correlation with Libyan rule of Egypt, as the title of king no longer held the same significance for the Libyans (Leahy 1985, 59; Broekman 2010, 88), and thus holding it did not provide the same justification to them for sole rule as it did for the Egyptians. It was, however, still a marker of status, particularly for Egyptians. Where a society's culture emphasises the status of 'aristocratic symbols', particularly as a form of legitimacy, then this only increases the incentive for other groups to adopt those symbols to enhance their own social status (Eisenstadt 1963, 150). As a result, to hold the title of king would have been an important symbol of status for a descent group. This would have given an incentive for a number of groups to adopt royal titles as a way of marking their status in relation to other segments and especially if they were connected to the royal family, following the concept of the political equality of brothers and descent groups described above.

Conclusions

There are three elements in the debate over the Libyan's influence on Egyptian society; to what extent where they Egyptianised, the extent they retained their ethnic identity, and is it possible to distinguish from the Egyptian evidence what form Libyan society might have taken? These questions are inextricably linked, as if the Libyans did not retain any of their original identity then all the evidence for their previous social structure comes from Egyptian sources, which are culturally biased and interpretive, such as their identification of single named rulers irrespective of the actual organisation of the Libyans (Sahlins 1968, 38). It is clear, however, that the Libyans retained a considerable amount of their ethnic identity after their arrival and rise in Egypt, and thus also at least some of their previous social structure. This structure clearly had a significant impact on the Libyan's perception of the role of kingship and central government, with neither of them following the traditional Egyptian forms. For the first time in Egyptian history it was no longer important for there to be a sole king of Egypt or for the country to be unified under their rule; indeed, it was possible for several kings to co-exist simultaneously. This difference can only really be explained by the observation that, 'for a substantial section of the population, 'King of Upper and Lower Egypt' was just a title' (Leahy 1985, 59); that for many Libyans the Egyptian traditions did not hold any real significance for them which was, in turn, a factor in the retention of many of their ethnic and tribal traditions. The fragmentation can be explained by O'Connor and Hüneberg's reference to the spread of military power away from the king, and this was certainly an aspect of it, this cannot explain the continued use of Libyan names, the importance of lineages or, most importantly, Libyan titles and their perception as being as or more important than Egyptian ones. These factors can only be explained by the Libyans having an alternative understanding of political processes, for which the model of 'segmentary lineages' currently provides the best explanation. Under this structure it is clear how it was possible to have multiple kings and great chiefs, due to the importance of maintaining social equality between the different social lineages and the competition between the individual rulers to secure further status for their lineage.

Whilst O'Connor and Hüneberg's understanding of the level of Egyptianisation amongst Libyans is much higher than is probable, this does not mean that O'Connor's suggestion for the structural organisation should be entirely ignored. Although there remains only circumstantial evidence for their existence, and much of that from the point of view of the Egyptians, the choice by High Priest of Amun Osorkon 'B' to date one section of his inscription by the reign of Shoshenq III rather than his local rivals suggests that this holds some validity. That both current explanations may have some validity for describing the Libyans political and social structure correlates with current trends in social anthropology. These have involved recognition that both hierarchical structures (like those of Paramount Chiefdoms) and corporate political structures (such as in segmentary lineages) can exist in the same polity (McIntosh 1999, 19; Fleming 2004, 179–180). Such 'mixed' political systems have already been proposed for Middle Bronze Age Mari, where corporately organised tribal confederations of pastoral nomads were integrated into the centralised political system of the Mari kingdom (Fleming 2004, 231), as well as for a number of African polities (McIntosh 1999, 15). Even if this integrated understanding cannot provide an explanation for Libyan society prior to their arrival into Egypt as a result of continued lack of evidence, it does further support the proposal that the Libyans retained some form of political structure after their arrival into Egypt. Whatever system the Libyans maintained was integrated into the centralised Egyptian political system, which led to the radical alterations we can see in the way that the system operated and was understood by those who ruled it.

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10

Keftiu and Griffins: An Exploration of the Liminal in the Egyptian Worldview

Beth Ann Judas

Introduction

Bronze Age Aegean (Keftiu)-Egyptian relations are an element of Egypt's political interactions from the 12th dynasty until at least the 20th dynasty (Fig. 10.1). The Keftiu, the Egyptian term for the Bronze Age Aegeans, are represented in the New Kingdom archaeological record in various ways: in Egyptian texts, imported ceramics, tomb paintings of the Theban elite and in the Aegean frescoes at Tell el Dab'a.

The evolution of the relationship between the early 18th dynasty Egyptians and the early Late Bronze Age Aegeans is demonstrated iconographically by the Egyptian use of the Aegean-type griffin. For both the Egyptians and the Aegeans, the beast is comprised of a leonine body with the head and wings of a raptor. The Egyptian griffin is falcon headed (Bisi 1965; Eggebrecht 1977, cols. 895–896; Wyatt 2009), while the Aegean version is eagle headed, sometimes with the beak of a vulture (Delplace 1967; Morgan 1988, 49). The griffin is a mythical animal that is part of both the Bronze Age Egyptian and Aegean iconographic corpora. It inhabits the space between the known and unknown, such as the world between the living and the dead and is a creature that is a symbol of liminality. Additionally, the Egyptians recognized that the Aegeans had their own griffin, which had similar associations with the sacred world.

The Aegean-style griffin appears in Egypt at the very start of the 18th dynasty, when Egypt began empire building and reinforced its earlier Middle Kingdom ties with the early Late Bronze Age Minoans. The reign of Ahmose roughly corresponds with the LM IA period in Crete, which represented the height of Minoan influence in the Aegean (Fig. 10.1). The early 18th dynasty's representations of the Aegean-style griffin in Egypt are clearly associated with the Keftiu (the Minoans at this time). The ancient Egyptians viewed them as a people who, situated at the edge of the known world, inhabited the liminal space between the known and the unknown (Judas 2013). This identification between the Aegean-style griffin and the Keftiu fades after the early 18th dynasty as the political situation in the Aegean changes with the waning influence of the Minoans and the rise of the Mycenaeans.

Mainland Greece, Crete, and Cyclades	**Egypt**
LH I LM IA	Hyksos Period to Early 18th Dynasty
LH IIA LM IB	Early 18th Dynasty to Thutmose III
LH IIB LM II	Thutmose III (late) to Thutmose IV
LH IIIA1 LM IIIA1	Amenhotep III
LH IIIA2 LM IIIA2	Amenhotep III to Akhenaten
LH IIIB LM IIIB	Akhenaten/Tutankhamun to Tausret
LH IIIC LM IIIC LH IIIC late	Setnakht/Ramesses III to Ramesses X
Submycenaean Subminoan	Ramesses XI Third Intermediate Period
Protogeometric	Third Intermediate Period

LH = Late Helladic (Mainland Greece) LM = Late Minoan (Crete)

Figure 10.1. Comparative Chronologies for the Bronze Age Aegean and Egypt © B. A. Judas.

Identification of the Keftiu

Although the Keftiu are mentioned in earlier Middle Kingdom texts (Cline 1994, A.7–8, 108; A.9–10, 109) and Middle Minoan Kamares ware is found at Middle Kingdom sites (Kemp and Merrillees, 1980; Warren and Hankey, 1989), depictions of Keftiu only first appear in the early 18th dynasty. These are found in paintings of a select number of Theban tombs belonging to high officials of Hatshepsut, Thutmose III, and Amenhotep II (Cline 1994; Strange 1980; Vercoutter 1956; Wachsmann 1987). The Keftiu are shown with other foreigners – Nubians, Asiatics and Puntites – who visit the royal court to present tribute or, in the case of the Keftiu (who are not conquered by Egypt), diplomatic gifts. These gifts consist of Aegean type objects (with examples in the Aegean archaeological record), which are presented to Pharaoh or his representative, usually the tomb owner (Bleiberg 1988, 1996; Merrillees 1972, 281–294; Panagiotopoulos 2000, 2001, 2012; Warburton 1997).

Only eight of the tombs of the Theban elite depict the Keftiu, and within this group only four show identifiable 'true' Keftiu, rather than 'hybrid' figures: Senenmut (TT 71), Useramun (TT 131), Menkheperresonb (TT 86), and Rekhmire (TT 100) (Davies 1933, 1944; Dorman 1991; Dziobek 1994, 91–92; Hartwig 2004; Hallman 2006; Porter and Moss 1960, TT 71, 86, 100, 112, 131; Wachsmann 1987, 29–31). A 'true' Keftiu is a red-skinned, bare-chested, clean-shaven male with long curly hair who wears a cod-piece or kilt, and sometimes sandals or boots (Fig. 10.2). A 'hybrid' displays a mix of physical features (such as skin colour and hair) and clothing from the Aegean, the Near East, Nubia or Libya. The hybrids are often labelled Keftiu, but are not recognizable specifically as Aegeans.

The concept and status of foreigners in Egypt

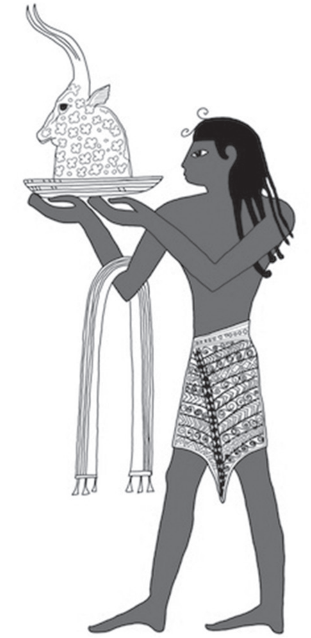

Figure 10.2. Example of a 'true' Keftiu depiction © B. A. Judas.

For the Egyptians, there were two types of people: the Egyptians and the 'other' (Baines 1996, 372; Hornung 1979–1980, 1.176–181, 2.134–137). A foreigner's status in the Egyptian world was expressed on a sliding scale. O'Connor defines a 'good foreigner' as one who was engaged in correspondence, who participated in reciprocal exchanges, gifting, and perhaps intermarriage (Hartwig 2004, 66; Loprieno 1988; O'Connor 2003, 167). They acknowledged Egypt's place in the cosmos, which was demonstrated by their appropriate diplomatic behaviour. Thus, the 'good foreigner' acted to uphold Ma'at, while the 'bad' foreigner exhibited aggressive behaviour, which often resulted in militaristic action by Egypt that was only resolved through war and treaties (O'Connor 2003, 171).

The Minoan Keftiu delegations were said to come to Egypt because they 'heard' (*sḏm*) of the might of Pharaoh, they did not 'see' (*mꜣꜣ*) the might of Pharaoh (Galán 1995, 92–93; Panagiotopoulos 2001, 271). They didn't compete for territory and, more importantly, they were involved with the trade of copper and tin (Betancourt 2012, 129–132; Muhly 1976, 190–192, 271–288, 334–335, 343–350). These early Keftiu delegations therefore appear to have fit into the 'good foreigner' category, as they actively engaged in purely diplomatic and mercantile relationships with Egypt (Judas 2010, 793–808). However, this categorisation could be reversed into 'bad foreigner' if the ideology or behaviour of either party changed.

In addition, the Keftiu were outside of the range of conquest and provided a physical and geographical buffer between the known and unknown. They represented the liminal space where *ma'at* and *isfet* met and inhabited this physical boundary of the Egyptian known (real) and unknown (supernatural) worlds. This association with boundaries and liminal spaces created an association with Horus, who was related to horizons, boundaries (Morenz 1973, 23) and, by extension, possibly griffins.

Keftiu and Horus

A Middle Kingdom stela (CG 20539), belonging to a 12th dynasty treasurer of Senwosret I named Montuhotep, links the Minoan Keftiu to Horus (Lange and Schäfffe 1908, 155, 7–10; Leitz 2002, 294; CG 20539). Montuhotep refers to himself as '*Ḥm*-priest of the secrets of the house of life', 'Overseer of the 'Big Hall/Portal', and '*ḥm*-priest of Horus of the Keftiu (*Ḥrw Kftiw*)' (Cline 1994, 108; Helck 1979, 26–27; Sakellarakis and Sakellarakis 1984, 198, no. 13; Strange 1980, 71–73, no. 21; Vercoutter 1956, 40–45).

This is one of the earliest references to the Keftiu and specifically associates them with Horus and a cult. The cult must have had some importance, however small, especially if the priest was a high level official of Senwosret I. Interestingly, this is the only reference to this particular version of Horus, with no other textual or iconographic attestations of this deity. Horus has many attributes aside from kingship (Allen 1915, 11, 16–17, 20; Allen 2003, 27; Morenz 1994, 23; te Velde 1967, 59–63) being linked also with horizons, the limitless sky, winds, the north wind and with the boundaries of time, such as the period between the old and the new years. Horus, therefore, has clear associations with aspects of liminal spaces and peoples. This is apparent in the distribution of Horus cult centres at fortresses in Nubia (Buhen, Aniba, Bigeh and Kubban) and in the northwestern Delta and coast (Zawyet Umm el Rakham, el Gharbaniyat and el Alamein) (Morris 2005). These fortresses sit at boundaries of Egyptian territory, many of which were considered tenuous. Therefore, Horus' associations fit neatly into the concept of the Egyptians view of the Keftiu, who lived at the boundary of the Egyptian world.

Griffins

In addition to the 'Horus of the Keftiu', the Aegean-type griffin also appeared in the late 17th dynasty and early 18th dynasty. The Minoans, and later the Mycenaeans, viewed the griffin as both wild and domesticated (Morgan 1988, 52–54; Morgan 2010). The Aegean-style griffin is often shown seated with a deity, accompanying a deity, pulling a chariot, solitary, or a hunting wild predator. The Aegean griffin, like its Egyptian counterpart, had solar and divine attributes which the Egyptians could have easily associated with the solar and divine attributes of their own griffins and falcon headed deities. However this appearance of the Aegean griffin in the late 17th early 18th dynasty seems to signal a significant change in the use and meaning of griffins in Egypt, which was tied to relations with the Keftiu.

Egyptian griffins in the Middle Kingdom

Here I will give two examples to illustrate the typical usage of griffins in Egypt before the introduction of the Aegean-style griffin. The tomb of Kheti (Tomb 17) at Beni Hassan features a griffin on the north wall of the chapel. It is falcon headed with a lion's body and tail ending with a lotus blossom, and obviously female, with prominent teats (Davies 1933, 26–28, fig. 5; Newberry 1893: II, pl. 13). She has no easily recognizable wings, instead having a geometric/linear design on her back, possibly a textile. The griffin also wears a leashed collar that tethers her to the ground and appears alongside domesticated dogs, demonstrating that she is a domesticated mythical animal and hunting companion (Bisi 1965, 26–27; Davies 1933, 26–28, fig. 5; Newberry 1893: II, pl. 13; Shedid 1994, Abb. 64).

The griffin, as depicted in this funerary scene, inhabits both the real world, as a hunting companion, but also the supernatural realm and underworld as a mythical animal. Despite this supernatural connection she is not dangerous or harmful because she is domesticated. Kamrin (1999, 87) suggests that the griffin is an *apotropaic* animal, which would further explain its appearance in this funerary context. This depiction of both mythical and realistic beasts sharing common activities indicates a blurring of the lines between worlds, which is common in tomb scenes and demonstrates the association between the griffin and liminal space.

Griffins also appear in royal iconography. A pectoral belonging to Senwosret III, from the tomb of his daughter Mereret at Dashur, depicts two griffins flanking the cartouche of the king (CG 52002 (JE 30875); de Morgan 1895; Vernier 1927). They are each striding on an enemy of Egypt and holding another down with their paws (Fig. 10.3). These griffins also wear *atef* crowns, associating them with kingship and the divine, and symbolising the Pharaoh as a warrior. Additionally, their solar/*apotropaic* attributes along with their role as domesticated or harnessed mythical predators, symbolically represent the triumph of *ma'at* over *isfet* in royal and elite iconography.

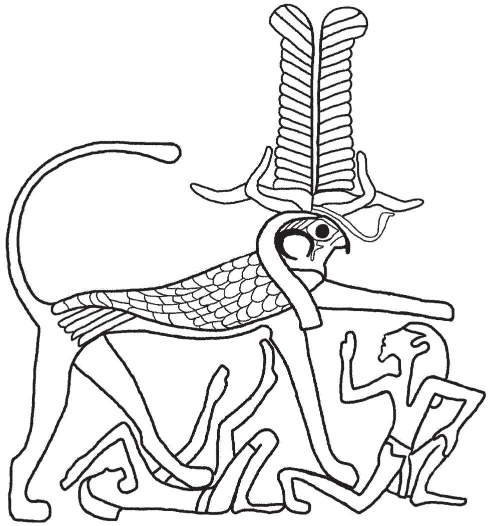

Figure 10.3 Egyptian Griffin from the pectoral of Senwosret III (12th Dynasty) © B. A. Judas.

Aegean griffins in the New Kingdom

At the end of the 17th dynasty, there is an addition to the Egyptian griffin corpus. The Aegean-style griffin (Fig. 10.4) is represented on the axe of Ahmose (JE 4673), found in the tomb of his mother, Queen Ahhotep (von Bissing, 1900; Bongioanni and Croce 2001, 369; van den Boorn 1988, 340–347; Goedicke 1995. For a photo see Lacovara 2008, 119–123, obj 67; Reeves 2002, 50–52). The ceremonial axe is decorated with standard Egyptian royal iconography that represents the strength and protection of the pharaoh. The reverse of the axe is split into three registers:

1. The top register contains *Ḥeh*, the god of eternity.
2. The middle register depicts Nekhbet and Wadjet as well as the sedge and lotus of Upper and Lower Egypt.
3. The bottom register has a couchant sphinx, which wears a possible *nemes* headdress and beard and holds a head in one of his paws. There are no names or titles present.

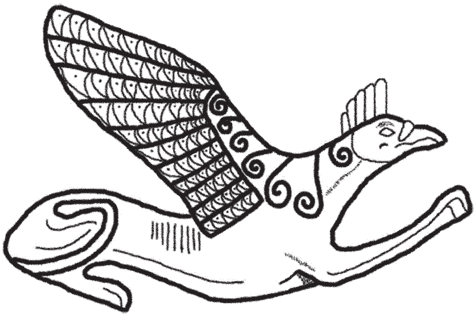

Figure 10.4. Aegean-Type Griffin from the Ahmose Axe (18th Dynasty) © B. A. Judas.

The obverse continues the theme of royal authority with three registers:

1. The top register has the *nomen, praenomen* and titles of Ahmose.
2. The middle register depicts Ahmose wearing the blue crown with a *uraeus*, in a typical striding and smiting pose and holding an unidentified kilted enemy by his short hair.
3. The lower register contains a couchant griffin with outstretched wings with an inscription reading 'beloved of Montu'.

The Ahmose axe griffin is distinct from the Egyptian type griffin found in the two Middle Kingdom examples. It has an eagle-type head (elongated compared with that of a falcon and without the eye markings) with a crest of feathers and a vulture-type beak, which are characteristic of an Aegean griffin. Its wings are outstretched and the feathers are delineated more realistically than the Senwosret III pendent. Little spirals are indicated on the neck and edges of the wings, another characteristic of Aegean griffins. Together these attributes create a visually distinct form of a griffin.

This Aegean griffin has inspired much discussion, especially by Vronwy Hankey (1993, 14), who believed it signalled the defeat of the Keftiu at the hands of Ahmose. This is a puzzling inference, especially as Ahmose was occupied with the Hyksos and the kingdom of Kerma, and a potential naval battle in the Aegean seems rather implausible. Betsy Bryan suggests the axe was created prior to Ahmose re-uniting Egypt, due to the writing of his name (*Urk.* IV, 813: 5, 13, 16, 583: 15; Bryan 2000, 220). If so, this would suggest a continuing or renewed alliance between the Keftiu and the Theban rulers prior to the expulsion of the Hyksos.

The axe represents royal power and his ability to conquer, protect, and rule. The reverse side represents an eternal and united Egypt under Ahmose's rule, while the obverse demonstrates the legitimacy of his rulership. Additionally, the inscription confirms that his reign was blessed by Montu, a falcon headed deity possibly associated with Thebes, thereby connecting the Theban rulers with the reunification of Egypt at the end of the 17th dynasty. In a similar manner to Senwosret III, Ahmose merges the role of kingship with the strength and predatory nature of the griffin to communicate that he is the king of a united Egypt. This use of the Aegean griffin, with its own connection to divinity and royalty, within Egyptian royal iconography demonstrates the familiarity of the craftsmen with Minoan and Egyptian concepts of the griffin.

Aegean-Style griffins at Tell el Dab'a and their Aegean counterparts

The Aegean-style griffin is also found in the frescoes of a palatial building at Tell el Dab'a/Avaris, which Manfred Bietak dates to the reign of Thutmose III (Bietak *et al* 2007, 27; 2013a). These frescoes, made in the traditional Aegean fresco and painting technique, demonstrate distinctly Late Bronze Age Aegean elite iconography and painting traditions. The scenes, due to their palatial and upper elite Aegean iconography, suggest a diplomatic party were associated with the rooms for a long-term, yet probably temporary, stay. Once the wall paintings started to break away from the walls, they were discarded and thrown into rubbish dumps (Bietak *et al.* 2007, 26–38).

The iconography of the paintings include bull-leaping in the manner of the bull-leaping representations at Knossos, decorative motifs similar to those found on Cretan palatial frescoes, and both miniature and full scale representations of Aegean-style griffins (Bietak *et al.* 2007, 40–41). The griffins have the same physical features as their Minoan brethren with eagle heads and vulture-like beaks (Morgan 1988, 49–50; Morgan 2010, 304), and hanging spirals along the edge of their wings. Blue and red are also utilised in the same colour scheme as Aegean griffins, such as the one that decorates a wall in Xeste 3 at Akrotiri on Thera.

The miniature Aegean griffin depicted in the Tell el Dab'a frescoes (identified by Livia Morgan (2010a), has, like the Ahmose griffin, an eagle-like head with a stiff crest comprised of small, curled feathers and larger blue, upright feathers. It also has raised bent wings and is in a flying gallop pose (Morgan 2010a, 309–312). Very fine, red lines suggest feathers on the head and a large black oval outlines the area of the face. Hanging spirals, separated by red triangles, line the edge of the neck and up through the top edge of the wing. This griffin is a wild predator and caught in the act of hunting, being part of a larger hunt scene that is reminiscent of the miniature hunt scene found on the east wall of room 5 in the West House at Akrotiri. In this hunting scene the wild griffin is posed in manner similar to the Tell el Dab'a griffin (Doumas, 1999, 47–49, 64–65, pls. 30–31; Morgan, 1988, 49–54), while hunting prey with a leopard (Morgan 2010b, 283–284) along a river lined with colourful rocks and flora.

The life-sized griffin, on the other hand, has been suggested by Clairy Palyvou to be in a couchant pose, while Bietak believed that it flanked a possible throne (Bietak and Palyvou 2000), based on the reconstructions of the throne rooms at Knossos and Pylos. The best-preserved fragment of this griffin depicts running spirals along the top edge of a wing and its reconstruction is based on several examples from the Aegean, such as those at Thera and Knossos (Immerwahr 1990, 176: Kn No. 28). A particular comparison comes from a scene from Xeste 3 in Akrotiri, depicting a woman/goddess (Doumas 1999, 130–131, 158–159, pls. 122, 128; Kontorli-Papadopoulou 1996, 101) seated on a tripartite piece of architecture, who accepts crocus stamens from a blue monkey. Behind her sits a large, domesticated griffin, with outstretched wings and its head turned upwards (Doumas 1999, 130–131, 158–159, pls. 122, 128). Hanging spirals run along the edge of the wings and triangular designs indicate individual feathers. The Xeste 3 griffin also has a leash, which indicates its domestication and subordinance to the woman/goddess. The Akrotiri fresco of a seated authoritative female figure accompanied by a seated griffin could be represented at Knossos and later Pylos, where physical thrones were flanked by painted, recumbent griffins (Marinatos 2013, 50–51, 65, 165; Morgan 2010, 304–305), in turn supporting a similar reconstruction at the Tell el-Dab’a palace.

Keftiu and griffins in the early 18th dynasty Theban tombs of the Nobles

As mentioned above, the early 18th dynasty wall paintings in the tombs of the nobles at Thebes depict the Keftiu with many readily identifiable objects from the Aegean. One of these object types, the animal-headed rhyta, are of particular note. This ritual vessel type was a traditional item in the Aegean vessel corpus and was made in ceramic, metal, and stone (Koehl 2006). Both bull and lion-headed rhyta, which are found in the Aegean, are painted in the tombs of Menkheperresonb, Useramun and Rekhmire and demonstrate the movement of these distinctive vessels from the Aegean to Egypt. Particularly noteworthy is a yellow griffin-headed rhyton painted in the tomb of Useramun, presumably made of gold (Dziobek 1994, pl. 20). The raptor head of the beast is slightly narrower than the typical Egyptian falcon head as seen in the Senwosret III pectoral. Like the Ahmose axe, the Useramun griffin head is depicted with a crest and spirals. A griffin-headed rhyton is also depicted in the tomb of Rekhmire (Davies 1944, pl. 18), and is stacked with other objects presented to the pharaoh by the Keftiu. Although most of the head is damaged, the slightly flatter edge of the beak, the narrow curve of the back of the head and the crest of feathers are preserved and are easily recognizable features of an Aegean-style griffin.

Like the griffins on the Ahmose axe and at Tell el Dab’a, the griffin heads in the Theban tombs are Egyptian representations of an Aegean griffin. The paintings are also from a similar timeframe as the Tell el Dab’a griffins. The Egyptians clearly associated certain attributes to the Aegean-style griffin: the narrower head shape, the crest of feathers on the head of the griffin and the hanging spirals.

Changing relations: Mycenaean Keftiu interactions with Egypt

It is important to separate the depictions of the early 18th dynasty Aegean-style griffin from the representations of the mid-to late-18th dynasty Aegean-style griffin. The representations of the griffin at Tell el Dab’a, the griffin rhyta in the Theban tombs and the griffin on the Ahmose axe are connected to specific moments, places and individuals. These are not objects that could be exchanged freely between rulers and the elite. They are all associated with royalty and the ‘other’: the axe with the names and titles of pharaoh, the presence of Aegean frescoes in a royal compound and the references to luxury items presented by a specific set of foreigners to Pharaoh and his royal representatives. However, the Aegean griffin never replaced or was used interchangeably with the Egyptian griffin. Instead, the Egyptian griffin continued to be used in Egyptian religious, royal and funerary iconography.

The shift in political and cultural power from Minoan Crete to the Mycenaean Greek mainland not only affected the diplomatic and mercantile relationships with Egypt, but also the perception of the Aegeans by the Egyptians. This change is sometimes referenced in regards to the change in the clothing of the Keftiu in the tomb of Rekhmire. The mid-to late 18th dynasty Egyptians viewed the Mycenaean Keftiu in a different light than the earlier Minoans. The Aegeans were no longer viewed as ‘good foreigners’ as suggested by the inclusion of the Keftiu in the list of enemies on Amenhotep II’s (Kenamun TT 93) and Amenhotep III’s (Anen TT120) throne bases depicted in Theban elite tombs. This may be due to the shift in power to the Greek mainland and the Mycenaean palatial sites there, which could have disrupted the previous good relations between Minoan Crete and Egypt. Perhaps the Egyptian diplomatic envoy sent to the Greek islands and mainland, as indicated by the Place-Name List from Amenhotep III’s statue base at Kom el Hetan, signals the moment when the Aegeans become less cooperative to the Egyptians and their agenda in the Eastern Mediterranean. The possibility that the Aegeans inhabited an exotic, liminal, supernatural space is dashed, and the Keftiu lose their status as ‘good foriegners’. As a result, the mid-to late 18th dynasty pharaohs viewed the Keftiu in a more reserved and cautious manner as they realized that a new group of peoples were in power in the Aegean, a group who did not necessarily continue to act in concordance with Egypt’s interests and were no longer ‘ideologically loyal’ (O’Connor 2003, 167). It may be that the Mycenaean political and diplomatic agendas no longer dovetailed with Egypt’s.

However, the Aegean type griffin continued to circulate through Egypt, as well as the wider Eastern Mediterranean, as part of the iconography of the so-called International Style (Feldman 2006, 29, although ‘*koiné*’ may be a more appropriate term). The ‘International Style’ resulted in a mutually understood visual aesthetic and artistic program for the royal courts in the Eastern Mediterranean. Portable luxury items were deliberately decorated with mixed cultural and often royal iconography and were intended for diplomatic exchange between royal courts. The resulting style created a very specific visual language targeted towards a select group of individuals. The evolution of the so-called ‘International Style’ iconography between Egypt and its diplomatic partners started to become popular during the reign of Thutmose III, but it was during the reign of Amenhotep III that International Style objects circulated on a large scale (Feldman 2006, 143). This timing coincides with the very active diplomatic relationships between the greater and lesser kingdoms in the eastern Mediterranean during the mid to late 18th dynasty.

Conclusions

The Aegean was at the edge of Egypt’s geographical awareness and, during the early New Kingdom, the Minoan Keftiu were considered ‘good foreigners’, and were associated with Horus of the Keftiu and the griffin. Their actions were in line with Egypt’s needs and desires, which were demonstrated by their appropriate and positive diplomatic behaviour. Yet, this relationship changed with the fall of Minoan Crete and the rise of the Mycenaeans and the resulting growth of their influence and power in the Aegean. The early 18th dynasty Aegean griffin image and its use in specific spaces indicated the Minoan Keftiu, the idea of a good foreigner, the association of liminality, and a special relationship between Egypt and the Aegean. In the mid-to late 18th dynasty, however, the Keftiu lose their good foreigner status as a result of the Mycenaean takeover of Knossos and the destruction of other palace centres on Crete. Although the Mycenaeans become part of the larger diplomatic and mercantile interaction with Egypt, they do not attain the status that the Minoans held with the early New Kingdom Egyptians. The Aegean type griffin is severed from its specific identification with the Minoan Keftiu in Egyptian art, and becomes part of the larger eastern Mediterranean visual international style.

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11

Ancient Egypt in the British Countryside: A Discussion of Egyptian Finds Recorded through the Portable Antiquities Scheme

Jason Lundock

Introduction

This paper will play on the theme of 'Ancient Egypt in a Global World' by discussing a curious group of artefacts with ancient Egyptian connections found in the British countryside and reported through the Portable Antiquities Scheme (PAS). In so doing, this paper will address issues of object biography and the diverse mechanisms for the construction and expression of identity. These issues continue to rise to the forefront of archaeological and historical discourse as our world becomes ever-more interconnected (Freedman 2005; Eckardt 2010, 7–10; Handley 2011), offering us a perspective on the previously underappreciated 'global' nature of many ancient societies. I hope that in this brief paper I will be able to make a small contribution to this continuing discussion.

It is important to qualify the aims of this paper and its utility for future researchers. It is not intended to offer a detailed examination of the Egyptian objects reported through the PAS, but rather to offer an introduction to this fascinating group, proposing interpretations of their pre-deposition lifecycle (Schiffer 1972, 158; Hurcombe 2007, 38–41). As such, the presentation and discussion of this paper has a largely theoretical approach with the aims of offering fresh material to the discussion of the globalising impact that Egypt has had on the world.

The Portable Antiquities Scheme

The PAS is a programme developed in the United Kingdom (excluding Scotland) to allow members of the public to report the finding of archaeological artefacts. It was designed in accordance with the Treasure Act of 1996, which replaced the outdated Treasure Trove Law, which had been in effect since the Middle Ages (Moorhead 2013, 3). The PAS was launched in six pilot schemes in 1997, before being expanded to include all of England and Wales by 2003 (Bland 2010, v). Archaeological finds reported to the PAS are largely found by metal detector hobbyists, though amateur divers, gardeners, and farmers have also reported significant numbers of finds. When a find is made, the finder reports the discovery to their local Finds Liaison Officer, who has the task of identifying, recording, and reporting the object on the PAS online database (accessible through its website, finds.org.uk). This database is operated on a Fully Open Source Software (FOSS) platform, allowing open access to material recorded through the PAS (Pett 2010, 3). Once recorded on the database, objects receive an individual PAS catalogue number, which is searchable on the database and provides the general reference used when referring to an object and have also been used in this paper. Objects of particular scholarly value, structured deposits of coins, or other metal work often find their way to the Central Unit, run through the British Museum in London, for conservation and study. Over the years, many significant and high-profile archaeological discoveries have been reported through the PAS, such as the Frome Roman Coin Hoard (Moorhead 2010a; Ochota 2013, 108–114), the Staffordshire Anglo-Saxon Hoard (Ochota 2013, 212–215), the Hackney Hoard of U.S. Double Eagle coins hidden by Jewish refugees during World War II (Ochota 2013, 68–71), and the Crosby Garrett Roman Cavalry helmet (Ochota 2013, 194–198; PAS LANCUM-E48D73). Furthermore, many of these discoveries have illuminated our understanding of habitation patterns and the material culture of the British countryside. It has become apparent that the countryside was far more densely populated during the Roman and medieval periods than was previously visible. Also, the material richness and diversity of this population is well beyond the level of subsistence farmers in mud-huts that characterised the perception of the pre-modern rural British peasant in both the popular imagination and in scholarship until very recently (Brindle 2011).

Data-set

It is with this in mind that I set out to investigate the objects of Egyptian origin or significance reported through the PAS. Egyptian origin or significance is something of a complex and problematic concept to apply, as perceptions of what is or is not ‘Egyptian’ can change over time and space, but may be best explained as ‘a vast and rather heterogeneous array of objects, all connected to Egypt, either in style, iconography or origin’ (Mol 2013, 118).

As Figure 11.1 illustrates, the data-set is not very large, comprising only 13 objects. This is nonetheless significant, especially considering that the number of objects of ancient Egyptian origin or significance one might expect to find in the English plough-soil is closer to zero. Before discussing some of these objects individually, I would like to clarify that I have not included numismatic evidence in this investigation, as coins are subject to wider and more complex social and cultural stimuli leading to their utilisation and transportation more widely than most other objects. It is important to note that Roman coinage is the most common find reported through the PAS (Moorhead 2010b, 143), accounting for 82% of the total objects recorded in 2012 (Worrell and Pearce 2013, 345). Therefore, it is likely that the majority of objects found in the British countryside of Egyptian origin or connection would indeed be coins. This is most evident in the issues of Marc Antony from his mint in Alexandria during his wars with Octavian, which had an incredible geographic and temporal circulation of use when it is considered that their debased alloy gave them a very low intrinsic value (RRC 543). At least 158 such issues of Marc Antony have been reported through the PAS (Moorhead 2013, 13). Another example of the complex relationship ideas and locations can have when applied to numismatics is the *Aegypto Capta* issue under Augustus, which depicts a crocodile in commemoration of the Roman victory over Cleopatra (RIC I 275a–b, 544–545). The coin evidence for connections and migrations of peoples and ideas across the ancient world is an interesting and fruitful line of inquiry, but is a topic for another paper.

PAS number	**Object Type**	**County**	**Parish**	**Brief Description**
NLM-114482	Statuette	East Riding of Yorkshire	Preston	Handle moulded anthropomorphic bust
BERK-34F754	Steel-yard weight	Oxfordshire	Dorchester	Anthropomorphic steelyard weight
LANCUM-22A5F0	Statuette	Cumbria	n/a	Anthropomorphic bust, possibly flint
SOM-18AD04	Statuette	Somerset	Upper Cheddon	Copper alloy Mummiform Statuette of Osiris
LVPL-C6E840	Statuette	Cheshire	Goostrey	Copper alloy zoomorphic statuette of a crocodile or lizard
NMS-1113C3	Knife handle (statuette)	Norfolk	Runcton Holme	Copper alloy folding knife in form of shabti
HAMP-453C46	Statuette	Hampshire	Wherwell	Copper alloy zoomorphic statuette of crocodile
HAMP-420491	Statuette	Hampshire	Crondall	Copper alloy statuette of Osiris
BH-F25093	Statuette	Hertfordshire	St Albans	Copper alloy statuette of Harpocrates
NMS496	Statuette	Norfolk	Skeyton	Copper alloy statuette of Isis Lactans
WMID40	Statuette	Worcestershire	Hampton Lovitt	Statuette of a sphinx
WMID42	Statuette	Worcestershire	Hampton Lovett	Copper alloy statuette of Bes
SWYOR-76B161	Statuette	North Yorkshire	Saxton with Scarthingwell	Copper alloy mount in the form of a crocodile

Figure 11.1. Ancient Egyptian objects reported through the Portable Antiquities Scheme.

Some of the objects in Figure 11.1 deserve brief discussion; this will then be followed by a more general discussion of the objects' contexts and their place within the wider British landscape.

The first object to be discussed is a small statuette just under 70cm in height representing the god Osiris wearing a double-feathered *Atef* crown, found in Upper Cheddon, Somerset (PAS SOM-18AD04; Fig. 11.2). He holds a crook and flails and is positioned in mummiform fashion, suggesting the links to death and resurrection with which this god is associated (Shaw and Nicholson 2008, 237–239). On the back are two attachment loops for mounting. The object is likely of Ptolemaic date (PAS Database 2014a), and is particularly noteworthy as it was found

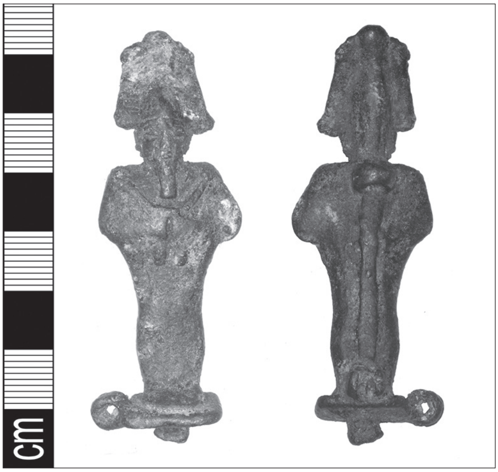

Figure 11.2. Anthropomorphic statuette from Upper Cheddon, Somerset (PAS SOM-18AD04).

in the southwest of England in Somerset, a place with far less ancient settlement than the southeast and an area with far less attention given to it by present day metal detectorists (Brindle 2011, 21–24 and 69–71). A similar find to this has been reported from Crondall in Hampshire (PAS HAMP-420491), making the presence of these objects more than simply a confusing anomaly and hinting to the application of these objects within the material cultural practice of the island.

As any archaeologist is well aware, not all finds are so pretty or so diagnostic. A copper alloy folding-knife handle of Roman date was found in Runcton Holme, Norfolk, and it depicts what is believed to be a *shabti* (PAS NMS-1113C3). The incorporation of *shabti* imagery into a functional object such as a knife is quite interesting. Was this an object designed specifically for funerary interment and decorated with appropriate imagery? Was it an object used in life whose designer wished to incorporate an interesting and exotic feature into the decoration, offering it some novelty, if not actual symbolic or ritual significance? This paper does not seek to answer these questions, but hopes to contribute to the data for further research on such objects.

The next three objects considered in this paper are small renditions of crocodiles in copper alloy, two being statuettes, and one being a mount for some type of furniture or box (PAS LVPL-C6E840, HAMP-453C46, and SWYOR-76B161). All three are of probable Hellenistic or Roman Period manufacture (PAS Database 2014b, 2014c and 2014d). The detailed example from Hampshire warrants particular note (PAS HAMP-453C46; Fig. 11.3), as its upturned tail recalls coin issues of Augustus from Nîmes as well as a statue from the villa of Hadrian at Tivoli (Worrell 2007, 339; RIC I 275a–b, 544–545).

The Romans were rather enamoured by the crocodile, being a symbol of eastern power and mystery, and incorporated its imagery freely, as the numerous examples in Roman statuary and mosaic art make abundantly clear. The crocodile is not only associated with the Nile itself and Egypt more broadly as geographic localities, but more specifically with the Egyptian deity Sobek, who was a complex and multi-faceted god (Zecchi 2010). Sobek appears to have had oracular abilities concerning theft (Merola 2007, 26), was conflated with Ra as a sun deity (Shaw and Nicholson 2008, 307–308; Zecchi 2008, 382), was on occasion depicted on Roman military dress (Alcock 2002, 36), was associated with military pursuits, and also served apotropaic functions. While the worship of Sobek originated during the pharaonic period, gaining particular popularity during the 12th and 13th dynasties (Shaw and Nicholson 2008, 307), the Greeks and Romans appropriated his cult, venerating him both at his sanctuary in Tebtunis and abroad (Merola 2007, 24–27). It has also been suggested that the presence of crocodile and Nilotic decoration in Britain could be indicative of the presence of the Cult of Isis during the Roman Period (Worrell 2007, 339). Additionally, the Roman military had a high presence in Britain and many of the finds reported through the PAS could likely come from disturbed grave contexts

(Brindle 2011, 61–64). Either one of these associations could help to explain the presence of these objects in British plough soil.

Osiris and Sobek are not the only Egyptian gods found on the PAS; the Hellenistic Harpocrates can also be found. A copper alloy example was found in the parish of St Albans and is currently on display in the Verulamium museum (PAS BH-F25093; Fig. 11.4). There is an additional example of Horus/Harpocrates in a statuette of Isis nursing her infant son, found in Norfolk (PAS NMS496). Such depictions are referred to as *Isis Lactans* and they are a common motif in the corpus of Greco-Roman Egyptising art (Tran Tam Tihn 1973), perhaps associated with concepts of sacred feminine and female redemptive power (Corrington 1989, 393–420), or reflective of the integration of Egyptian ritual into Roman medicinal practice and magic (Laskaris 2008, 459–464). The cult of Isis, as well as Harpocrates, was widespread in the ancient world and is well attested in the archaeological record.

I would like to conclude the description of individual objects with an intriguing hand-worked ceramic bust, which is 97.5mm in height and 61.7mm in width, found at Preston in the East Riding of Yorkshire (PAS NLM-114482; Fig. 11.5). The features and the elongated profile of this hand-moulded clay statue-head match eastern styles more than might be expected for anthropomorphic renderings from ancient Britain. It has been suggested that this represents a number of deities, Isis among them, and it is unfortunate that no more of the statue remains to provide us with clearer attributes. At the date of publication, no analysis had been undertaken

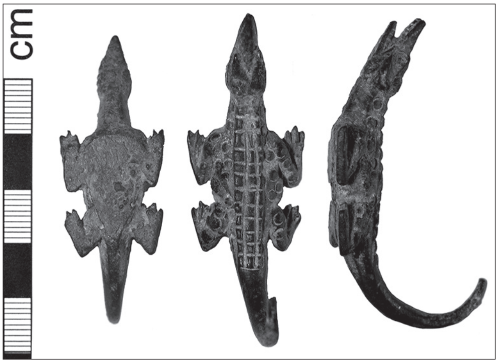

Figure 11.3. Crocodile statuette from Hampshire (PAS HAMP-453C46).

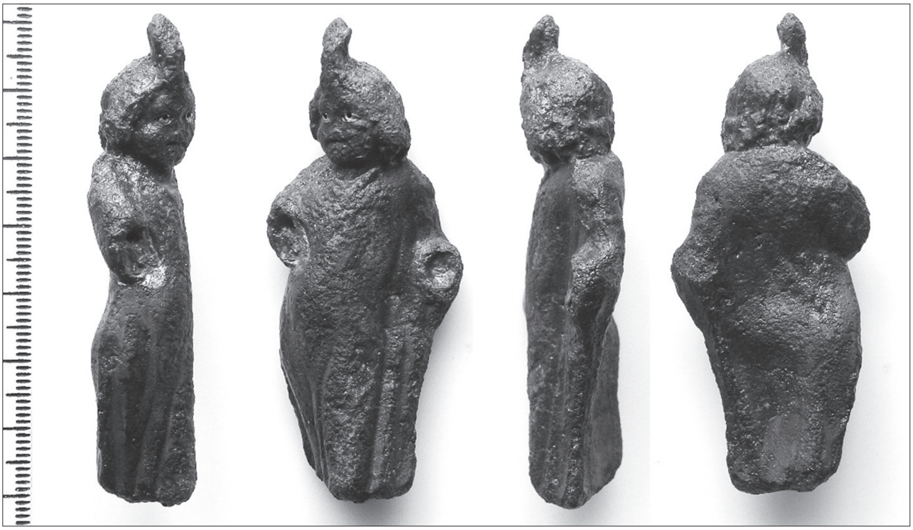

Figure 11.4. Harpocrates statuette from St Albans (PAS BH-F25093).

to determine the origin of the clay from which this object is composed, though large inclusions of black flint were noted in the fabric.

One thing that becomes immediately apparent is that all these objects are statuettes or three-dimensional representations, almost exclusively composed of copper alloy. This may be due to the manner in which these objects are found, largely by metal detection. During my research into copper-alloy vessels, I came across a few reported through the PAS that could possibly have been manufactured in Egypt (such as PAS SUSS-37ADE6 and WILT-D5EBB5). However, these examples are suggested to be Alexandrian based solely on stylistic grounds (Radnoti 1938, 14–25), and could easily be of north Italian manufacture (den Boesterd 1956, XIX–XX; Hill *et al.* 2004, 14), making it inappropriate to count them among the current data-set. The fact that all these objects are small statuettes is significant as it likely reflects something of comparable biographies and came to be interred in rural Britain in much the same way. It is also remarkable that several of the statuettes exhibit pharaonic imagery; and it is plausible to ascribe spiritual or ritual significance to the remaining objects.

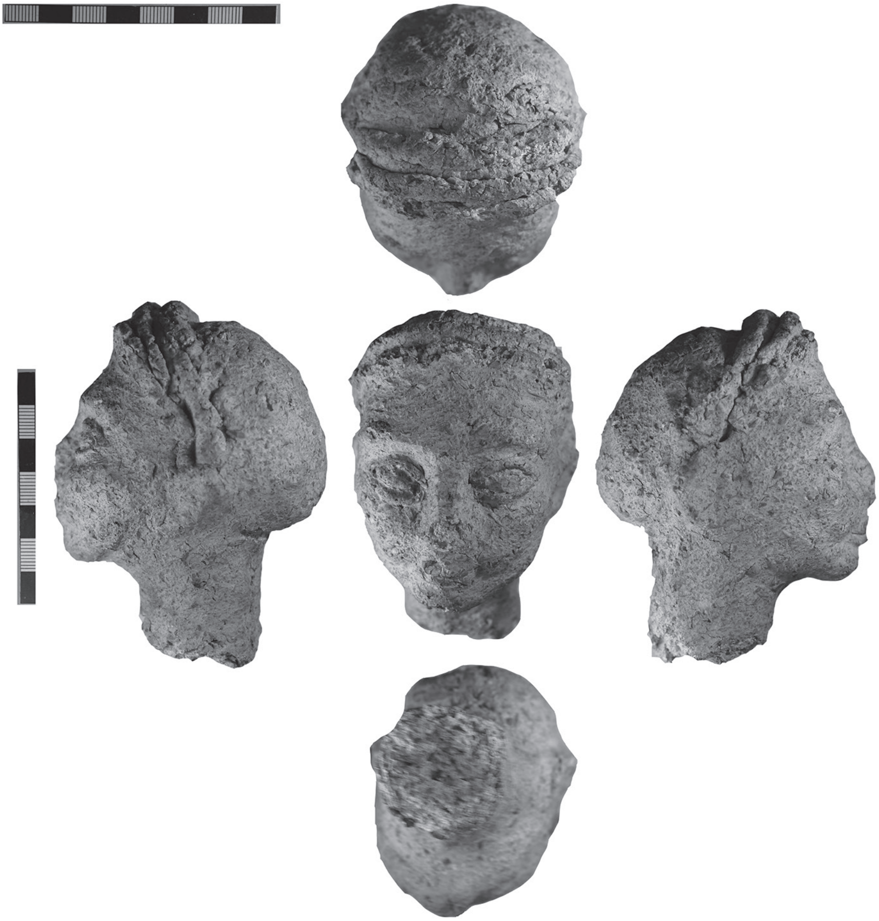

Figure 11.5. Anthropomorphic bust from Preston, East Riding of Yorkshire (PAS NLM-114482).

Contextualising decontextualised objects

These objects explain very little by themselves and must be considered in the wider context of the surrounding areas as well as within the greater British landscape. Although the objects come from mostly un-stratified and almost undoubtedly disturbed contexts, it is still possible to piece together something of the history of the sites where they were found. The analysis of dates and types of finds that were also discovered in the area helps to create a rudimentary profile of the sites in question. This was achieved by running a four figure grid reference search, encompassing one square kilometre, of the findspots of each of these objects through the PAS database. The results are illustrated in Figures 11.6–11.15.

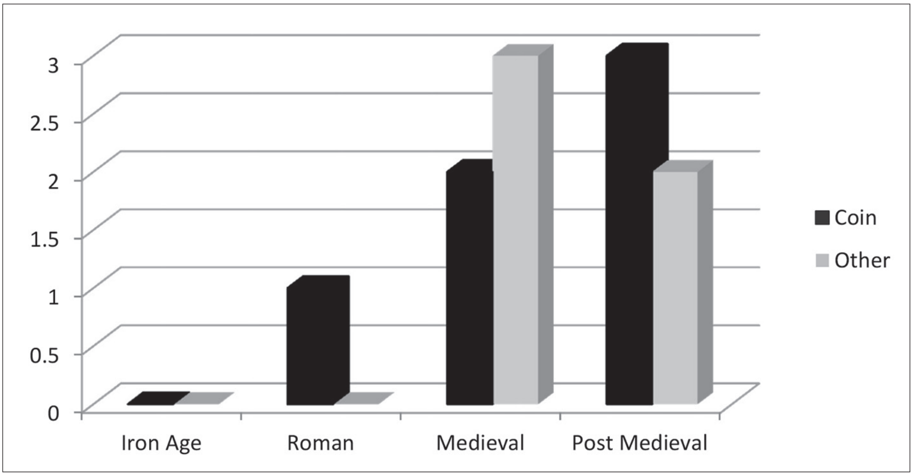

Figure 11.6. PAS finds from Crondall, Hampshire.

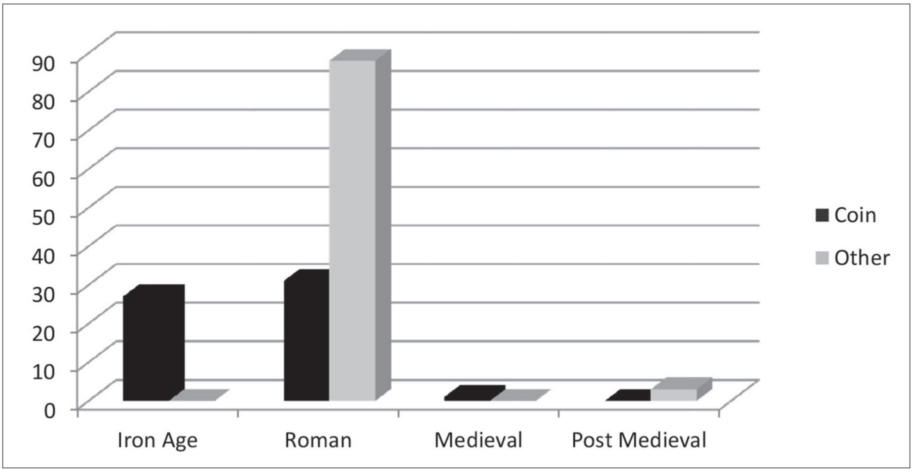

Figure 11.7. PAS finds from Dorchester, Oxfordshire.

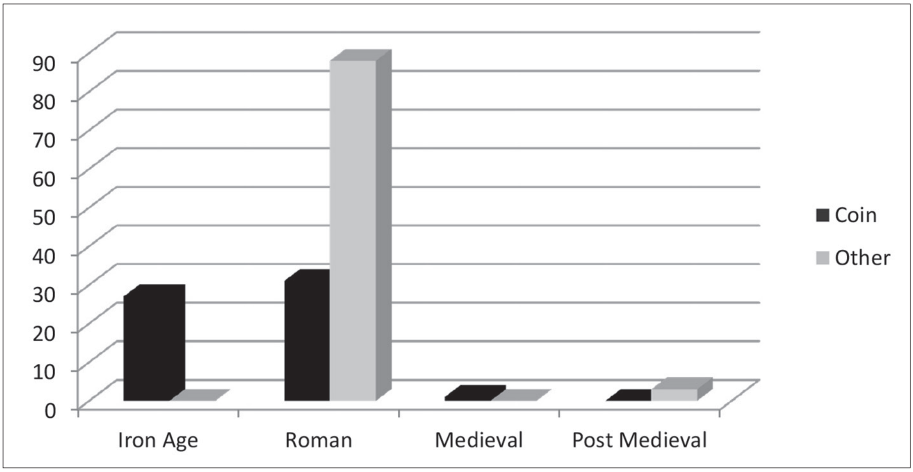

Figure 11.8. PAS finds from Goostrey, Cheshire.

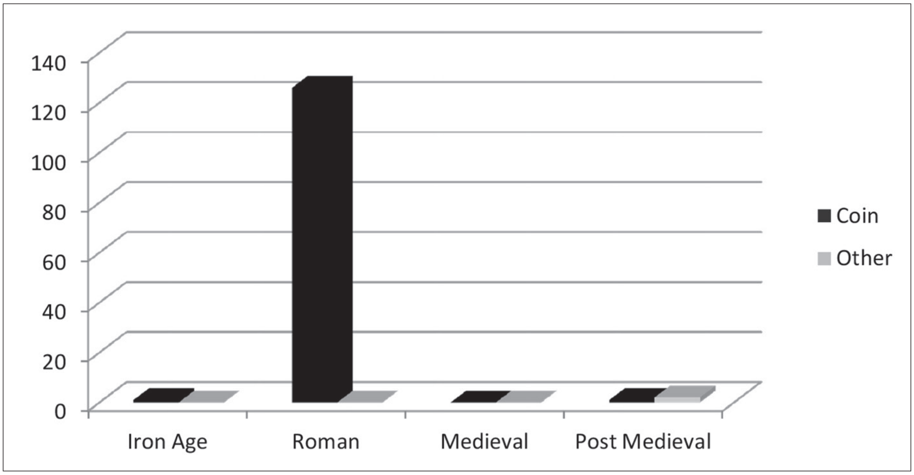

Figure 11.9. PAS finds from Hampton Lovitt, Worcestershire.

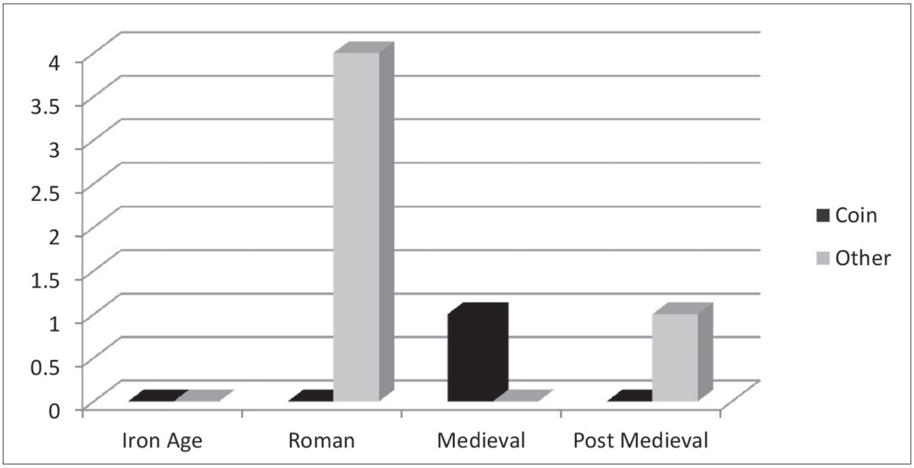

Figure 11.10. PAS finds from Preston, East Riding of Yorkshire.

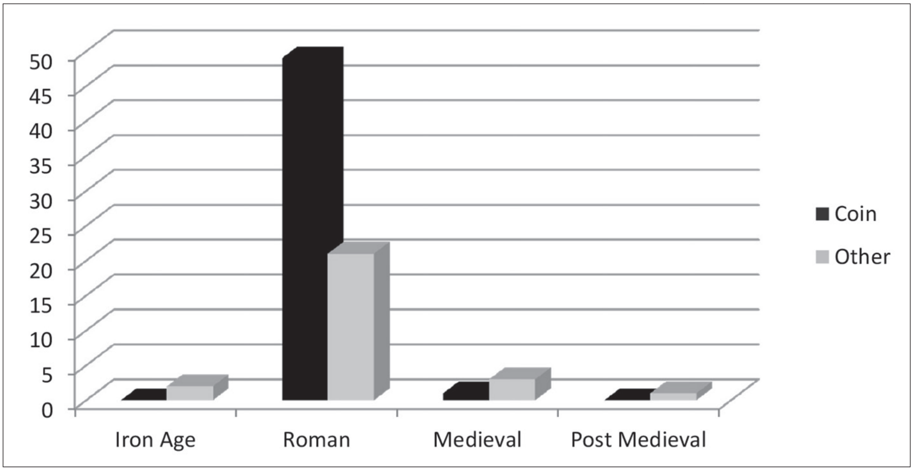

Figure 11.11. PAS finds from Runcton Holme, Norfolk.

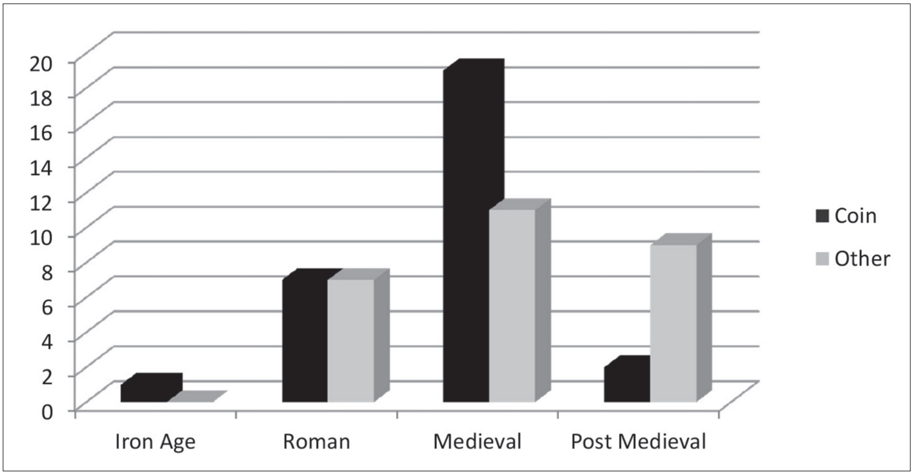

Figure 11.12. PAS finds from Saxton with Scarthingwell, North Yorkshire.

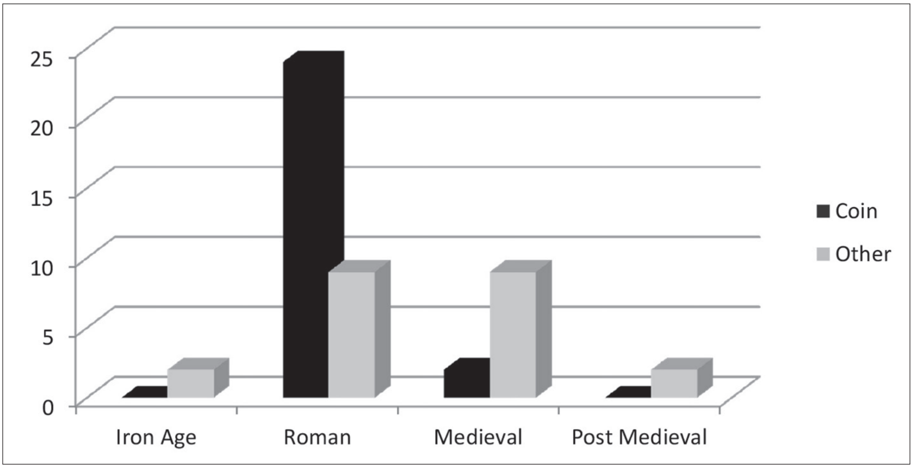

Figure 11.13. PAS finds from Skeyton, Norfolk.

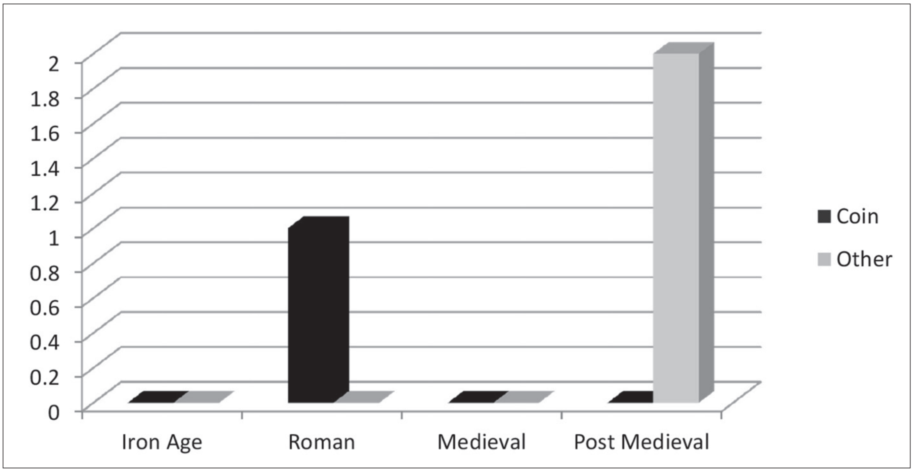

Figure 11.14. PAS finds from St Albans, Hertfordshire.

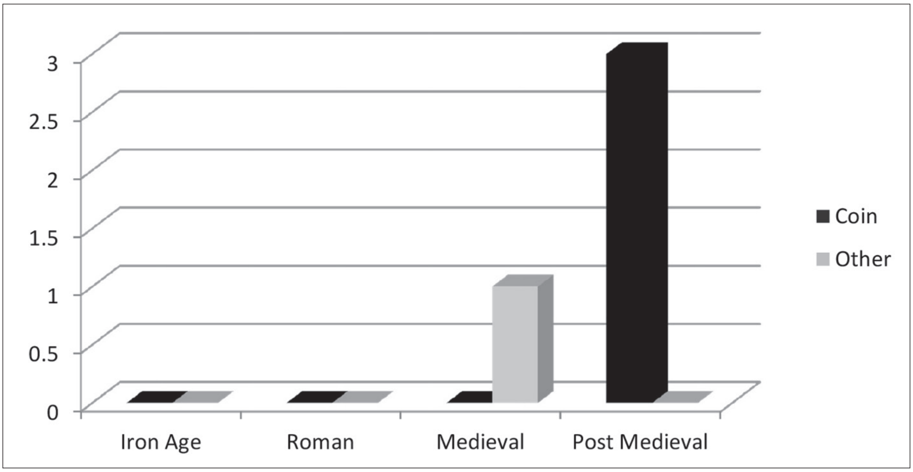

Figure 11.15. PAS finds from Upper Cheddon, Somerset.

Surprisingly, about half of the objects come from areas that were not at all prolific in finds, with the crocodile from Wherwell being found in complete isolation. This was particularly surprising with the site that produced the Harpocrates statue, being within the parish limits of St Albans. Here, the famous Roman town of Verulamium may be found, with its rich Iron Age and Roman Period burials – not to mention the fact that St Albans was a sprawling medieval cathedral town and has been steadily occupied to the current day. This particular find must have been located in the liminal reaches of the settlement area, which could well have implications for the depositional process of this object. Nonetheless, developing a profile for sites with such small assemblages as Crondall or Hampton Lovitt is basically impossible, besides being able to say that there is no evidence for them being materially rich at any point in history.

Six sites did provide significant numbers of finds and allow us to construct some rudimentary character for their occupation history: Goostrey in Chesire, Dorchester in Oxfordshire, Preston and Saxton with Scartheringwell in Yorkshire, and Runcton Holm and Skeyton in Norfolk. With the exception of Runcton Holm's and Saxton with Scarthingwell's significant number of medieval finds, these sites all bear a largely Roman character to their finds assemblages. It may be considered that the presence of more than twenty coins could well represent a small settlement from that period on the site (Moorhead 2013, 4) and the presence of other objects, such as ceramics or brooches, in comparable numbers may also help to indicate new settlement sites (Brindle 2011, 51–57). There is a tendency among some researchers to qualify objects in good condition found outside of their expected context as the losses of nineteenth to twenty-first century collectors (Bradley 1990, 167) or, perhaps, as objects deposited by new-age mystics (Hutton 1999). This is supported by the long history of the appropriation of the past to suit the construction of power identities, perhaps best epitomised by the 'Egyptising' and 'Classicising' art collection of King Charles I of England (Duggan 2014, 195–203). However, the profiles of these sites show that it is more than likely that they were deposited in antiquity and that a broader view should be taken when approaching de-contextualised objects. Egyptian objects found in ancient contexts from southern Asia also indicate that this material could and would travel far and be deposited in the archaeological record during antiquity (Mairs 2007). In all events, these objects represent the use of a certain perception of 'Egypt' as a concept relating to one's identity and cultural outlook, a perception that could be multi-layered and adaptable over time and geographic space (Mol 2013, 128). The most plausible biography we can attribute to these objects is that they were brought to Britain and deposited in pre-modern times. The Roman Period provides the most likely time for such transport and deposition to take place, as will be discussed below.

Ancient mobility and the 'globalised' world of antiquity

It is important to note that these objects do not exist in a vacuum and that there is certainly other evidence for ancient migration and the impact of ancient Egyptian civilisation in ancient Britain. This is perhaps most explicit in the evidence for a Temple of Isis in London, mentioned in a *graffito* found at Tooley Street and on an altar dedicated by Marcus Martiannius Pulcher (Johns 1996, 117; MacDonald 1996, 247; Henig 2004, 232). Additionally, a bone hair-pin found in Moorgate Street in London is likely to depict Isis (Johns 1996, 114–117). The presence of Egyptian devotion is further evidenced by the presence of a bust of Serapis, found in a *mithraeum* located in the Walbrook valley, on the west end of the Roman city (Henig 2004, 233), which coincides with 'the City' or 'Square Mile' of modern London. Moreover, lamps of Anubis have also been found in London graves, showing evidence of familiarity with this deity and seeking its protection for the journey into eternity (Mackinder 2000). Intriguingly, the discovery of gypsum-wrapped mummified burials in Yorkshire dated to the Roman Period indicates that Egyptians, or at least those practicing what they perceived as Egyptian customs, inhabited the island in numbers large enough to perhaps have established minority communities in Britain (Tozer 2013). These ritual contexts must be kept in mind when considering the nature of the Egyptian objects reported through the PAS – namely, almost exclusively small statuary depicting gods or pharaohs. These objects could help to expand the understanding of the appropriation of Egypt into the ritual sphere in Roman Britain, perhaps representing objects of personal devotion or dedication in these rural environments.

The locations and contexts of these objects do suggest that they were brought to Britain and deposited in the archaeological record during antiquity, with the globalised world of the Roman Empire providing the most logical environment for such travel and trade to take place. It is worth offering a brief discussion on the individuals who may have purposefully or accidentally interred these objects in the rural environs. All too often in archaeology, anything imported, unusual, or exotic is immediately associated with elites (Chase and Chase 1992, xi; Bradley 2000, 55; Gerrard 2013, 120–121). While the globalising effects of the Roman world are typically seen as primarily involving the construction of an empire wide 'elite' cultural identity (Gardner 2013, 8–9), the removed contexts and assemblage profiles associated with the Egyptian objects in this paper do not suggest any inherent association with particular wealth or social station. In fact, the very remoteness of some of the find-spots could argue the very opposite. Though the elites of St Albans or Dorchester may well have had international connections stretching all the way across the Mediterranean to Egypt, it is probable that the inhabitants of most of these sites were not notably wealthy and were more likely to have been small landed agriculturalists. How then did these individuals come to possess Egyptian objects and what led them to lose or discard them?

There has been much recent high-quality work on migration and mobility in the Roman and Late Antique periods, such as Eckardt's 2010 edited volume or Handley's 2011 contribution to the subject, and it has become evident that the world of the Roman Empire was about as close to a modern 'globalised' world as one could get before the modern era. Egyptians were also more mobile during the Roman Period than ever before, as their recruitment into the Roman fleet, army, and even Praetorian Guard attests (Noy 2000, 246). As the Roman military played a key role in the migration of peoples to Britain during the Roman and Late Antique periods (Handley 2011, 43–45), this could give a possible scenario for how these objects arrived on British shores. Egyptians also migrated to fulfil roles in society outside of the military service, such as priests, medical practitioners, or, less glamorously, slaves (Noy 2000, 246–249). British emigration throughout the wider empire is also attested both archaeologically and epigraphically (Ivleva 2011, 132–153). It is evident through this rich evidence of migration and mobility during this period that cultural interchange could have taken place between many peoples in different locations throughout the empire, with altering levels of acceptance and adaption applied.

As far as Britain is concerned, the picture that develops shows people from every corner of the empire inhabiting the province; living, dying, and being buried there. This had the effect of making the global local, forcing response and adaptation to a complex set of new cultural and power relations (Mata 2012, 36). Much of this migration was likely facilitated by the Roman army, both directly by the immigration of soldiers and indirectly by the merchants and businessmen who were drawn to the island to profit from the presence of the well-paid soldiers begging to be alleviated of their ample cash. There is also the civilian administration which came and went as their postings across the empire dictated, as well as opportunistic colonists who saw the chance of settling in a new province with rich agricultural and mineral resources.

An example of the diversity of the population of Britain during the Roman Period is a small gold talisman found at the Roman fort at Caernarfon, which has inscriptions both in Greek and Hebrew (Arnold and Davies 2000, 41; RIB I 436). This object also illustrates the presence of easterners on the island during this period. A further example of such cultural plurality is the famous bilingual (Latin and Palmyrene) funerary marker of Regina from South Shields in the county of Tyne and Wear (Mattingly 2011, 217–218; Carroll 2012, 281–311; RIB I 1065). The use of divergent forms of symbolism and materiality is a means by which immigrants can communicate their 'otherness' within a broader social landscape (Ivleva 2011, 147). Such statements made through the material or epigraphic habit may have had a function in the construction of personal and community identity within a complex cultural landscape.

While helpful, this evidence for migration still does not really explain the biographies of these objects. The present consensus among scholars is that PAS finds are indicative of long abandoned rural settlements (Brindle 2011, 345–372; Moorhead 2013, 3–7). This suggests that these objects were lost by accident or neglect from either private houses or rural shrines. Conversely, the possibility of these objects originating from disturbed grave contexts is still viable and could help to explain the presence of these particular objects (Brindle 2011, 61–64). It would seem appropriate in any case to conjecture that these objects were of ritual importance to their owners, though reconstructing that ritual significance proves elusive. This plays directly into the manner in which these objects were used and perceived during their use-life (Gardner 2007, 128–138). The complex cultural layers which surround Egyptian objects in other cultural contexts is a highly complicated one and makes it impossible to draw universal conclusions of how this material fits into the wider cultural landscape as a whole, a statement perhaps especially true for the Roman world (Mol 2013, 128). Determining the place of these objects in the ritual life of the province may prove impossible. It certainly is not the intent of this brief paper to provide a unified or empirical theory for how these objects came to rest in the British countryside. This paper is indeed intended to widen the scope of other researchers' studies of the 'global' nature of ancient Egypt by introducing and illuminating these peculiar discoveries from the British countryside. As research into the globalised and multi-ethnic character of ancient Europe and Britain progresses, this data will prove useful in further characterising the complexity of the plural identities at work in the British countryside in antiquity. To conclude, the primary points are firstly that these objects almost certainly made their way to and were deposited in Britain during antiquity, most likely during the Roman Period. Secondly, they represent the surprisingly multi-cultural and multi-ethnic fabric of rural Britain during the Roman Period and reflect the presence and far reach of ancient Egypt in this ancient 'globalised' world.

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Abbreviations

RIB	*Roman Inscriptions of Britain*
RIC	*Roman Imperial Coinage*
RRC	*Roman Republican Coinage*

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12

Tanagras in Cross-Cultural Context: A Study on Stylistic Variability Across the Mediterranean

Kate Minniti

During the Hellenistic Period, the Mediterranean was a diverse multicultural, multiethnic, and religious melting-pot that had been shaped by the incessant interactions produced by trade, diplomacy, warfare, colonisation and migration since the Bronze Age (Braun 2003, 33). From the 9th century BC onwards the trading networks around the Mediterranean became more intense and complex than ever as a consequence of the extensive spread of Phoenician and especially Greek settlements. The peak of this phenomenon of geographical and cultural expansion was considered to be the conquests of Alexander and the creation of the kingdoms held by the Diadochi in the 4th century BC.

Past scholarship put forward the model of ‘Hellenisation’, according to which Greek culture spread ubiquitously and became predominant in every territory of the ‘empire’, almost completely replacing local languages and cultures (Hadas 1959; Tarn 1948). Habicht (1958) and Green (1990) proposed an alternate theory that focused more on the existence of a clear distinction between an oppressive, Hellenised ruling class and the people from different cultures subject to it. More complex theories have been recently developed, suggesting that integration, intermarriage, appropriation of customs, cultural exchanges, and cooperation were standard practice in cross-cultural realities (Hall 2004, 40; Lomas 2004, 8–10; Rotroff 1997, 224). The surviving material culture strongly supports this third model, as hybrid artefacts became progressively dominant at this time (Rotroff 1997, 225), creating new mixed material contexts, rather than material and cultural transplantations (Hall 2002, 108–10).

One of the regions where this model of interaction and integration has been demonstrated to work best is Egypt. The Ptolemies’ domination of Egypt resulted in a coexistence of different cultures, social habits, and religious practices, rather than the oppressive ‘colonial’ legacy of the Hellenised ruling class as claimed by scholars until the 1970s (La’Da 2003, 162–3). The Ptolemaic age in Egypt seems to have been an age of collaboration (Matthews-Roemer 2003, 16) in which the most fruitful aspects of the two cultures blended together to create a new society.

However, it is important to point out that the process of interaction and integration with Greek culture had begun in Egypt in the 6th century, when Greek traders settled in Egypt (Lloyd 2000, 365–9) and established the important *emporion* of Naukratis (Möller 2000, 186). In the western Mediterranean the process had begun even earlier, with the establishment of Greek settlements (which, as convincingly pointed out by Osborne (1998), should not be addressed as *colonies*) in the 8th century BC. The first contacts between the newcomers and the locals gradually evolved from aggression to trading networks, alliances and intermarriage (Hall 2002, 97–103).

In cross-cultural contexts it is also essential to highlight the link between material culture and identity. According to Mattingly (2010, 287), identity cannot be inferred from material culture alone. On the contrary, it is the result of the combination of different factors, expressed as follows:

identity = material culture × practice

The importance of material culture takes precedence over textual evidence because of the universality of experience, as opposed to the elitism of written sources (Antonaccio 2010, 37–8). Agents' choices when dealing with material culture in the shaping of identity in cross-cultural contexts cannot be ignored, since material culture shapes people and vice versa. In this manner, material culture provides information about identity, ethnicity, agents' choices and practice, especially when embedded in the original archaeological context.

Artefacts in cross-cultural contexts often incorporate techniques, style, and iconographies from different societies and the meaning of these objects can change in relation to producers and consumers' practice (Antonaccio 2010, 49–50; Lomas 2004, 9–10). An example of this process are the Tanagras, a type of terracotta figurine produced in Greek settlements overseas, which seem to have been particularly receptive to foreign influences without completely losing their original character.

This paper address a number of research questions regarding the Tanagras and their role as cross cultural objects. How can we explain stylistic variability in the Tanagra production across the Mediterranean in the Hellenistic world? Can we consider them indicators of cross-cultural identities, and if so, which models of interaction account for this? Given the extremely broad horizon of the questions, this survey is limited to two case studies: Naukratis in Egypt, and Tarentum in southern Italy. Both settlements enjoyed a unique cross-cultural context, established well before the Hellenistic period, whose strength lay in the high degree of integration and fruitful interactions between locals and foreigners. It may, then, be of interest to discuss the reasons behind the stylistic variability and common features in production, and use of the examined artefacts, as well as considering issues of integration and ethnicity in overseas settlement through a category of object that was almost ubiquitous throughout the Hellenistic Mediterranean.

Tanagra figurines

After a first phase of hand-modelling, the introduction of the mould technique in Greek terracotta production after the 8th century BC marked the start of an impressive development of coroplastic industries, especially in powerful cities with strong artistic and trading traditions, such as Corinth, Miletus, and Athens. After Alexander's conquests, terracotta production came to be dominated by the so-called Tanagra style, widespread throughout the whole Mediterranean (Fig. 12.1) from *c.* 330 to 200 BC (Higgins 1967, 95). The denomination was coined in the late 19th century because of the discovery of an outstanding number of terracotta statuettes in the Boeotian site of Tanagra, which was wrongly attributed as the place of origin of the style. However, as convincingly demonstrated by Thompson (1966), the creation of this style had its roots in Athens.

In this paper, we define 'Tanagras' as terracotta statuettes, produced by moulding between *c.* 330 and 200 BC, whose style had originated in Athens between the 5th and 4th century BC because of the influence of five essential factors: the 'Rich Style' in sculpture (Higgins 1986: 107), the birth of the New Comedy, along with the anti-luxury decree issued by Demetrius of Phalerum (O'Sullivan 2009, 47–66), the rising trend towards naturalism in figurative arts (Burns

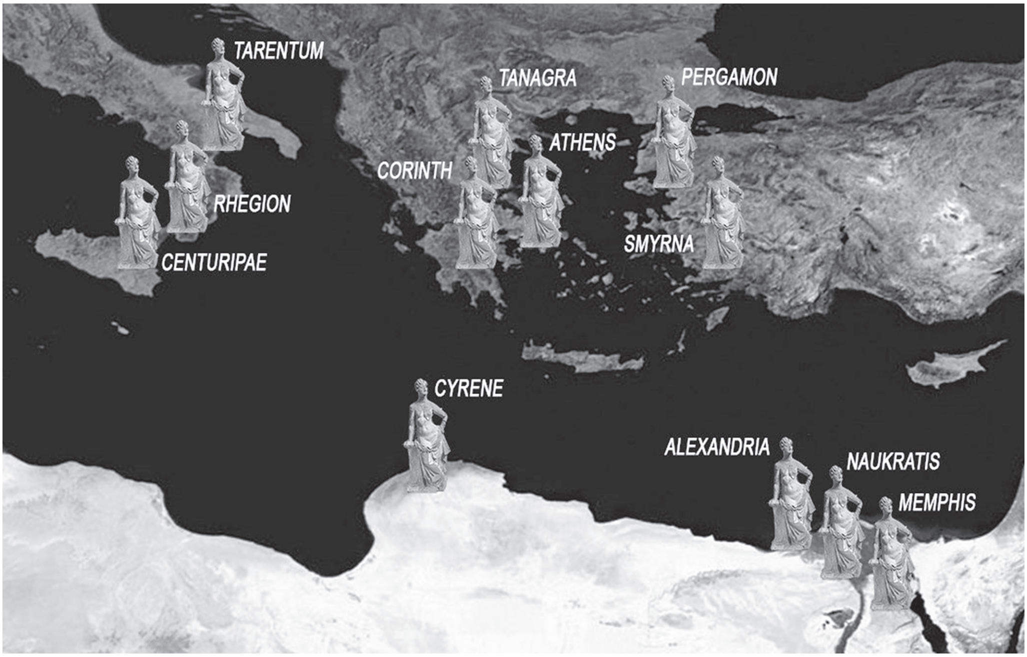

Figure 12.1. Major production centres of Tanagra figurines during the first part of the Hellenistic period (300–200 BC). © author.

2001: 27), and the invention of 'figurine vases' (Jeammet 2010, 62–3). They might reflect some trends in the contemporary monumental sculpture (*e.g.* features inspired by Lysippus' and Praxiteles' works), but remained nonetheless an independent production.

Before the Tanagras in Naukratis and Tarentum

The production of terracotta figurines in Naukratis started soon after the foundation of the settlement in the last quarter of the 7th century BC. They show a range of influences, which varied over time; between the 7th and middle 6th centuries BC the main stylistic influence was Cypriote, after which the style of east Greece, with a prevalence of Rhodian elements, endured until the Classical period (Thomas, forthcoming). Different stylistic elements (Greek, Egyptian, Near Eastern, Phoenician) continued to be integrated in production, so that around the last quarter of the 4th century it was not unusual to have figures with mixed features and themes of various cultures.

Tarentum had a strong coroplastic tradition since the foundation of the settlement (*c.* 710 BC) that reached its *acme* during the cultural renaissance of the city in the first Hellenistic period (Bell 1990, 64; Dunbabin 1999, 90). The encounter with the Apulians started as open war, but later led to a 'veritable koine' between the two cultures (De Juliis 1996, 554), so that it can be claimed that the Tarentine coroplastic production on one side drew upon Italic elements, and on the other continued Greek stylistic traditions, reflecting in its small statuettes major trends of contemporary sculpture in mainland Greece (Higgins 1970, 269).

Production techniques

The material used in Naukratis was principally Nile silt (Higgins 1967, 130–2). It has a coarse, irregular surface, and is generally light in weight and extremely micaceous (Higgins 1954, 404). The colour is dark, in different shades from orange to brown, frequently with a grey core (Fig. 12.2). Tarentine terracottas usually had a powdery, smooth surface (Fig. 12.3). The texture of the clay is extremely refined and the fabric contains fine mica (Higgins 1967, 90). The colour is light, varying between cream, ochre, and pale yellow.

It seems that in Tarentum the figurines were lightly fired because the layer of clay forming the statuette was relatively thin (Higgins 1954, 336); following this principle, it might then be inferred that Naukratite kilns operated at a higher temperature (between 750° and 950° C according to Burn and Higgins 2001, 20), because Egyptian figurines are generally thicker than their south Italian counterparts.

With regards to modelling, in Naukratis it seems that the norm was to mould the front of the figurines (Edgar 1905, 132–3), with the back moulded or shaped by hand. Moulds were made of terracotta or plaster, a technique of Egyptian origins (Uhlenbrock 1990, 16) suitable for crafting the different parts of the figurine in several sections and successively connecting

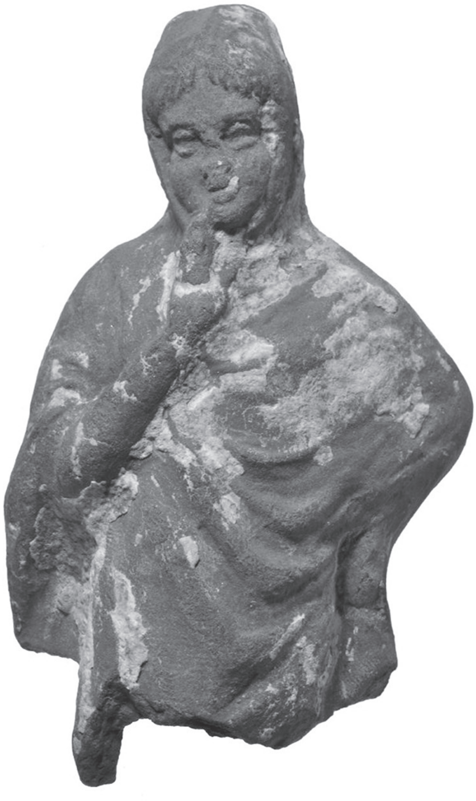

Figure 12.2. Female figure veiled with her himation © The Trustees of the British Museum, catalogue nr. GR 1886,0401.1447.

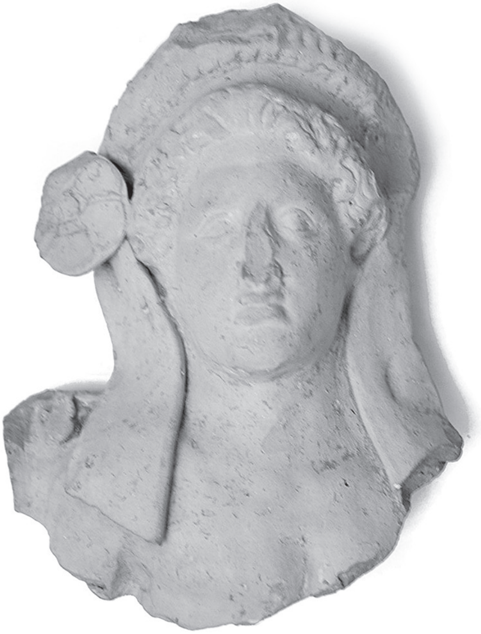

Figure 12.3. Bust of reclining Dionysos, from Tarentum. Pale clay. © The Trustees of the British Museum, catalogue nr. GR 1882,0203.4.

them together (Edgar 1905, 133 n. 12). Generally, no more than three moulds were used for the same statuette (Bailey 2008, 5). The figurines were usually hollow, with a vent on the back or plausibly an open base, and mould-made heads whose details could be added or retouched in a later phase (Bailey 2008, 134; Gutch 1898–1899, 74).

Tarentine moulds are all well-washed, made of polished clay, and were used either for frontal and back modelling, or combined and interchanged with other moulds in order to create variations on the same theme (Kingsley 1981, 43–4). From the late 5th century BC onwards, heads and limbs were usually modelled in separated part-moulds and then attached to the body in order to create more lively figures (Uhlenbrock 1990, 17). The figurines were often hollow, with solid heads that were made separately, and open spool-shaped wheel-made bases or vents on the back.

The main difference between Naukratite and Tarentine production in the post-firing phase was the thickness of the lime wash. The white coating in Tarentum was generally light and merely used as a base for the application of other colours on top (Fig. 12.4). Egyptian figurines were less accurately coated and wash could be applied remarkably thickly (Fig. 12.5), obscuring the finer details of the modelling (Bailey 2008, 6), which became a fairly common feature in Egyptian production (Ashton 2003, 72; Barrett 2011, 103). Afterwards, the figurines were coloured with natural pigments, traces of which have been found on most of Tanagra figures from both settlements.

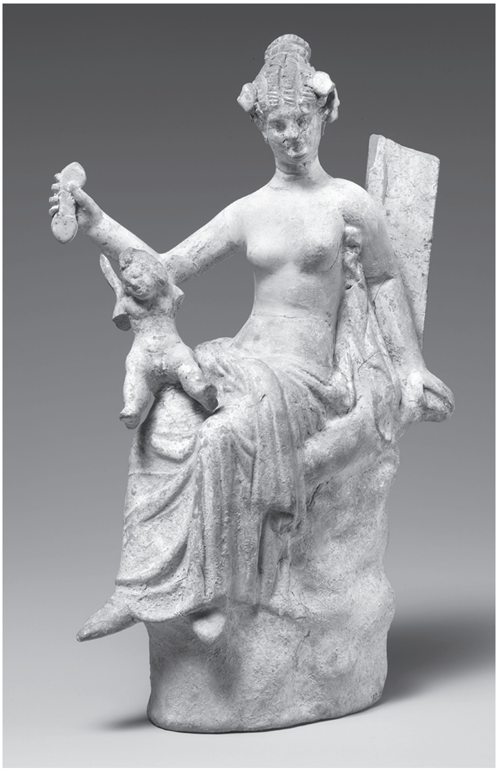

Figure 12.4. Thin white coating on seated Aphrodite figurine, from Tarentum. © The Metropolitan Museum of Art, catalogue nr. 12.232.11, www.metmuseum.org.

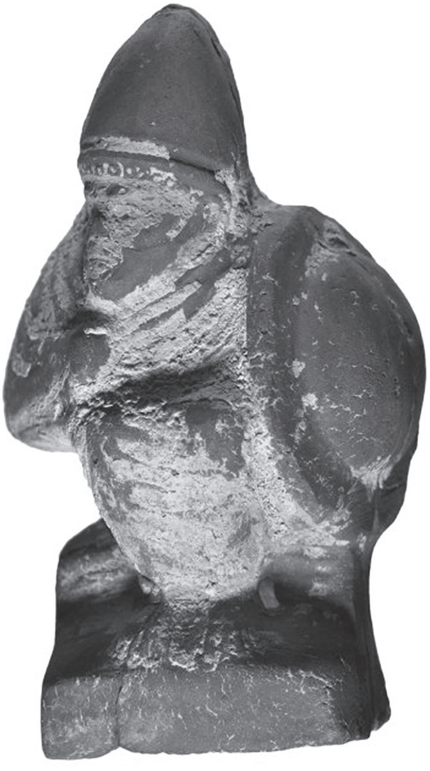

Figure 12.5. Figure of soldier with thick white coating, from Naukratis. © The Trustees of the British Museum, catalogue nr. GR 1888,0601.99.

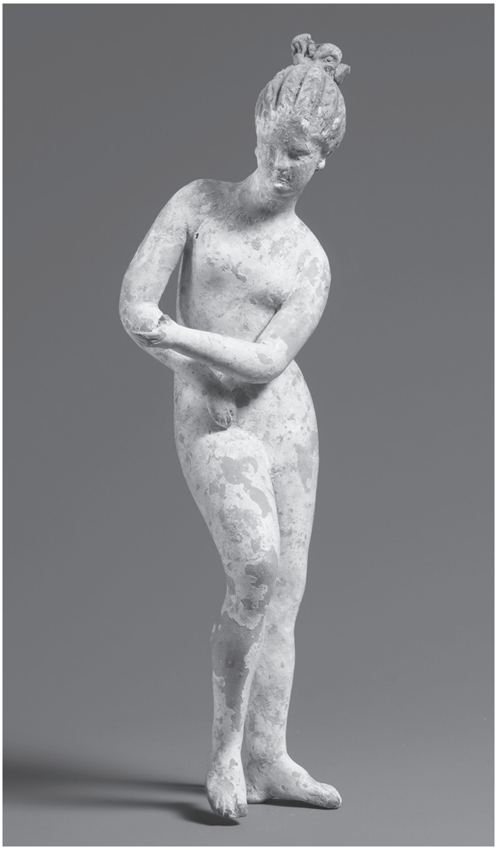

Figure 12.6. Naked 'Aphrodite', from Tarentum. © The Metropolitan Museum of Art, catalogue nr. 13.227.14, www.metmuseum.org.

The most common subjects were women draped in *chiton* and *himation* or, in the case of Tarentine products, half-naked (Fig. 12.6). They could wear veils over their heads, or jewellery, or the typical 'melon' hairstyle. Other figurines represented theatrical characters from comedy and tragedy, old people, dancers, wrestlers, soldiers, priests, and celebrants. Greek divinities were common subjects in both cities; in Naukratis they were present along with Egyptian gods, and both categories often had syncretic attributes.

Import, export, and influence

Hellenistic Tarentum exerted a considerable hegemony on the material culture of the whole of Magna Graecia, Sicily and Cyrenaica (Graepler 2010, 219), which is inferred more from artistic influence than from exports. Fabrics used in Apulia are all quite similar in colour and consistence (see Higgins 1967, 127–8), even if some imports from Tarentum found in Canosa have been identified on plastic vases. However, Tanagras made in Apulia and several statuettes from Cyrene show clear signs of the artistic hegemony of Tarentine coroplastic production in their stylistic and typological features. Moreover, the percentage of imports from outside was extremely low in Tarentum.

Naukratis, in contrast, may have been partly influenced by the Alexandrian workshops, but it does not seem to have lost control of its own production in favour of imports coming from the capital, or from mainland Greece and overseas, with the majority of Naukratite Tanagras made locally since the foundation of the city in the 7th century BC. At the same time, the Naukratis does not appear to have exported its Tanagra figurines.

Find contexts

Out of a total of *c.* 200 Tanagras discovered in Naukratis, contextual information has been recorded for only ten per cent of them. The artefacts have been found throughout the city in contexts related both to civil and religious life. The highest concentration was in an area possibly devoted to terracotta production (Thomas and Villing 2012, 96), which included Petrie's site 95 (1886, 45; Bailey 2008, 51) and Hogart's site 38 (1898–1899: 41–2; 80), situated in the northeastern part of the city. Other Tanagras come from 'Ptolemaic houses' (Petrie 1884–1885, 84), probably corresponding to the houses marked by Petrie in the western part of the settlement. Five statuettes have been found in the cemetery, two others are recorded as coming from the sanctuary of Aphrodite in the southern part of the city, and two more were most probably discovered 'in the city', but the record lacks any other information (Gardner 1888, pl. XV, 3 and 11).

Hellenistic figurines in Tarentum have been found in a number of well-recorded contexts related mainly to religious practices, both inside the city walls and in the *chora* surrounding the city: the south-eastern temple on the acropolis dedicated to an unidentified goddess, the small sanctuary in Fondo Giovinazzi whose titular deity is still debated, the important Sanctuary of the Source in Satyrion devoted to the nymph Satyria, Persephone and Aphrodite, an hypogeum, and some other isolated places of worship in the necropolis. Various moulds have also been found in one of the areas probably devoted to terracotta production, in the north-eastern part of the settlement near Ospedale Civile, while the finding location of others is unknown (Dell'Aglio 2001, 174–5). The predominant context is, however, funerary: Tanagras appear to have been the grave good *par excellence* in Tarentine tombs (Graepler 1994, 283).

Use and consumption

The actual meaning and use of Tanagras is still undetermined. Some scholarship considered Tanagras as profane images (Burr-Thompson 1966; Merker 2000), whose meaning was decided by the dedicator according to the specific circumstances of the offering. Other publications suggest instead a strong connection between Tanagra figurines and religion, especially concerning funerary practice and rites of passage (Graepler 1994, 1997 and 2010; Lönnqvist 1997). In written sources, such objects are mentioned in relation to religious practices: the Palatine Anthology defines a *kòsmion* as a doll-like votive (VI 280), and Plato describes a place as sacred to the Achelous and the nymphs 'judging by the figurines and statues' (Phaedrus 230b–c), making a clear distinction between *kòrai* (small votive images) and *agalmata* (statues of bigger dimensions) (Herodotus. 1.131; Lysias 6 15). Moreover, the close resemblance between certain of Tanagras found in votive deposits in sanctuaries and others found in burials, strongly suggests a correlation between the figurines and religious practices (Burns and Higgins 2001, 21).

Naukratite figurines were connected with funerary practices. Gardner (1898–1899, 29) reports that three statuettes were found in burials as part of the grave goods and two more heads seem to have been found in the necropolis. Nothing specific was recorded about the objects the Tanagras were found with, which seem to have been relatively standardised (*alabastra*, *lekythoi*, shells, jewellery, everyday life objects). Moreover, the unearthing of two heads inside the temenos of Aphrodite, and the presence of statuettes portraying well-known deities of the Greek and Egyptian pantheon and celebrants of religious festivals confirms the connection with worship practices.

From these factors it can be theorised that some figurines were probably dedicated as votive offerings in sanctuaries (Gutch 1898–1889, 71), possibly for rites of passage from childhood to adulthood that were usual in Greek religion (Burns and Higgins 2001, 20–1; Jeammet and Mathieux 2010, 161), and included in grave goods to protect the dead in the transition between worlds (*e.g.* Dionysos and his retinue: 3340, 3343, 3344), or as the dedication of figurines which would have been offered in sanctuaries by the deceased (Burns and Higgins 2001, 21; Jeammet and Mathieux 2010, 161). Figurines found in dwelling houses (Petrie 1884–1885, 84) might have had an ornamental function (Burns and Higgins 2001, 21) or have been kept in household shrines for domestic cults, a plausible possibility since there was a long-established Egyptian tradition of performing religious practices inside the house (Frankfurter 2010, 541–3; Stevens 2009).

As shown by the archaeological context thus far recorded, the use of Tanagras in Tarentum was primarily associated with religious practices that took place chiefly in the necropolis (Lippolis, Garraffo and Nafissi 1995, 41), but also around sanctuaries. Tanagras were deposited together with earlier figurines and votive *pinakes*, which were usually broken to prevent reuse (Higgins 1967, l), and they seldom were the majority. The content of the votive deposits frequently followed a standard composition with few variations in the associated types, some of which predominated but not all were necessarily present at once. When the deposit was associated with a sanctuary, however, the prevalence of certain types linked to the same religious sphere of the temple can be easily assessed. Nevertheless, the Tanagras appear to have been explicitly connected with it only in rare instances (*e.g.* Lippolis 1995, 118, D3.g27), and in other circumstances female Tanagras were part of the deposit even if the deity worshipped in that context was probably male (*e.g.* Lippolis 1995, 116, D3.g22).

Tanagra figurines were probably used as votive offerings because of the 4th–3rd century BC transition between the types of votive terracottas produced for ritual purposes (Bell 1990, 65). When new models specifically created for religious practices were introduced (Lippolis 2010, 216–7), the use of Tanagras in Tarentum was reduced to their inclusion as grave goods.

Most of the burials containing Tanagras belonged to people not yet adult (Graepler 1997, 284), and the majority of them contained female individuals (Graepler 2010, 219; Lippolis 1994, 144). It would appear that the types of Tanagras were selected according to the gender of the dead (Graepler 1997, 297–8). From these factors it has been inferred that the role of Tanagras in burials was to protect the owners of the tomb (Graepler 2010, 219), to represent them, and to assure them of a successful transition between life and the underworld (Jeammet and Mathieux 2010, 150). Alternately, especially in the case of unmarried girls or female children, Tanagras were included to play the social roles they had been deprived of by death (Jeammet and Mathieux 2010, 161), as likely demonstrated by the statuettes of Artemis and hieratic enthroned goddesses, both linked to rituals of transition from childhood to adulthood, and which were also dedicated in sanctuaries by living girls about to marry (Graepler 2010, 219).

Analysing stylistic variability

Tarentine production was among the most renowned and stylistically innovative in the whole Mediterranean, and showed greater similarity to that of mainland Greece than the other important centres in the west (Higgins 1967, 126). After the third quarter of the 4th century BC, the Tarentine figurines abandoned the hieratic frontality tied to the votive tradition and started to be depicted in more lively positions, often with the use of a 'jaunty contrapposto' of the body (Uhlenbrock 1990, 66–7) which developed into more twisted poses, first balanced and then enhanced by the increasingly dynamic treatment of the drapery. The same exceptional treatment of physical details can also be seen in some of the most original Tarentine creations: naked or half-naked figurines of dancers, acrobats, maenads and goddesses (usually interpreted as Aphrodite, see Fig. 12.6).

The Naukratite production, in contrast, seems not to have been so particularly distinguished, especially in comparison with nearby Alexandria, which since the second half of the 4th century BC had overshadowed every other centre in Egypt. It is nevertheless important to underline that the capital's influence on the Tanagra production in Naukratis seems to have been less marked than one would expect. In fact, in Naukratis the cross-cultural context of the settlement was manifest in terracotta production and even during the first phases of Hellenism, the figurines exhibited hybrid features, such as Egyptian themes in Greek form (Fig. 12.7). Despite the degree of originality expressed in variations on existing themes due to the combination of Egyptian subjects and Greek forms, the Naukratite production was not particularly elegant. The figurines are generally not remarkably lively in their treatment of the drapery or pose. Some seated and standing women are slightly twisted, and judging from the position of some of the heads it can be supposed that the figures had a certain degree of movement, but from the majority of statuettes it can be inferred that they maintained an almost full frontality and the treatment of details was generally quite mediocre, with a few rare exceptions.

The influence of monumental sculpture trends in both production centres can be seen in certain details, such as the long, slender necks with folds ('Venus rings') which recall the works of Praxiteles, or the contrapposto of some figurines probably inspired by Lysippos' work. The influence of the latter was understandably more marked in Tarentum because of its closer contacts with mainland Greece and because the artist was working in the city around the last quarter of the 4th century BC (Strabo VI 3, 1).

In conclusion, Tarentine production was more technically and stylistically advanced, refined, and elegant than at Naukratis. The nearby Alexandrian workshops can indeed be said to have overshadowed the fame, elegance and diversity of objects produced at Naukratis, although its productions did remain stylistically independent from the influence of the capital. The Tanagras manufactured in both settlements exhibited original features expressed in different ways: at Tarentum variations on existing subjects were created, as well as completely new types following the Greek tradition in techniques and themes, whereas in Naukratis the originality lay in the adoption of Greek forms for Egyptian subjects, following a trend already established well before Hellenism. Finally, both productions were influenced by trends in monumental sculpture coming from mainland Greece, which were re-elaborated in order to fit the smaller scale statuettes. However, it is important to emphasize that the stylistic differences were due not only to technical reasons, but also to diversity of environment and context.

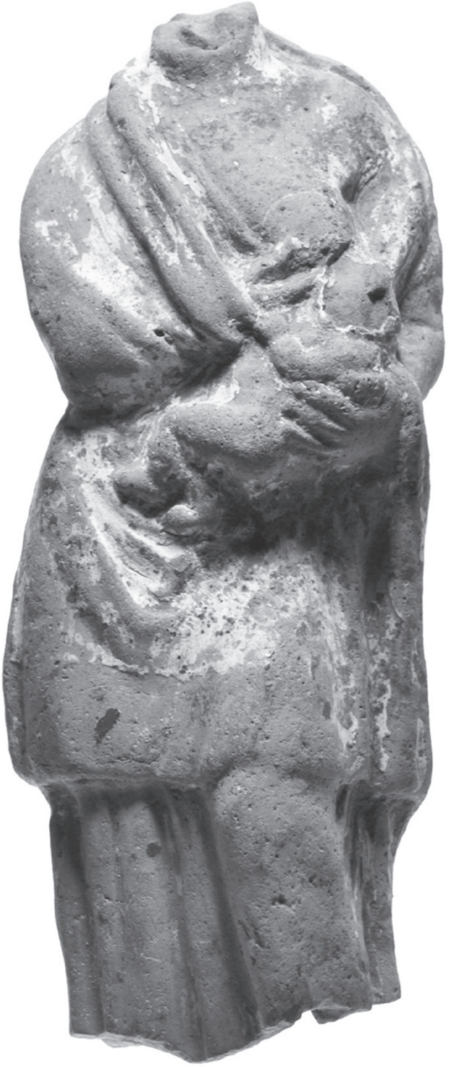

Figure 12.7. Woman with child, probably from Alexandria © The Trustees of the British Museum, catalogue nr. GR 1886,0401.1446.

Common patterns

Naukratis and Tarentum indubitably had, since their foundation, represented two unique and differing realities in the Mediterranean. Tarentum was the first and foremost Laconian settlement in the west, possibly established after the First Messenian War (Dunbabin 1999, 31; Malkin 2003, 128), and became a strong, independent *polis* with its own well-defined identity. On the other side of the Mediterranean, in the Nile Delta, the Egyptian state allowed a dozen of Greek *poleis* to settle an *emporion*; Naukratis rapidly became not only the main foothold and residential base for Greek traders (Thomas *et al*. 2013, ¶2), but also one of the most famous and important trading centres in the eastern Mediterranean. This was also reflected in the highly cross-cultural character of the *emporion*, which although under Egyptian jurisdiction had its own laws and a mixed population.

Basic production phases were the same, but with four main differences: the clay, the number and material of the moulds, and the modelled back. These factors, along with the integration of stylistic inputs from the outside world influenced the degree of refinement. Nonetheless, in these two contexts, which differed greatly in terms of origin, culture, prestige, and technical abilities, similar patterns in material culture can be identified.

Firstly, a remarkable number of common subjects can be observed, both in the human (women, adolescents, old grotesque people, dancers, actors and masks, maenads, celebrants) and divine worlds (Athena, Hera, and figures related to the cult of Aphrodite and Dionysos). Another common feature is the context of their findspots: Tanagras have been excavated in funerary and religious contexts in both settlements. Although no figurines have yet been discovered in dwelling houses in Tarentum, as they have in Naukratis and other Greek cities (Burns and Higgins 2001, 21), this lack of domestic contexts is due to lack of context itself, as no residential quarters have yet been unearthed in Tarentum. This absence of evidence should not be assumed to indicate or be used as a counter-argument for their exclusive funerary and votive use there.

The evidence thus far shows similarities in terms of the locations in which they were discovered locations and the subjects that they portrayed, two factors which pose another question: were there also commonalities in the use of the figurines, or did the same objects assume different meanings and use because of their dissimilar contexts? After all, Naukratis and Tarentum had no common origins; no Laconian city is listed among the founders of the *emporion* in Egypt, and Laconian pottery does not seem present enough to infer a conspicuous number of Laconian presences (Möller 2000, 125–7). They were dissimilar types of settlements and critically the social and political landscape surrounding them was not alike, with the Egyptian empire on one side and the multifaceted context of Magna Graecia on the other. However, the use of Tanagras shows well-defined common paths linked with the religious sphere in different contexts without connection with one another.

The first of these similarities is their inclusion in grave goods. In both cities, certain burials contained the same types of Tanagras: young boys, satyrs, women, and Eros. Whereas Tarentine tombs containing terracottas have been and are still being analysed (Graepler 1994; 1997; 2002), the scarcity of context and findspots in Naukratis does not allow for in-depth analysis of the gender of the deceased or their social status.

Another parallel can be found in the religious context of sanctuaries and dedications. Tanagra figurines have been unearthed in the *temenos* of Aphrodite in Naukratis, a habit found also in Tarentum in sanctuaries most probably devoted to the goddess (A7, D3 g.27). Tanagras portraying Aphrodite herself, and also Hera, Athena, and people possibly connected with celebrations in honour of Demeter and Dionysos, have been discovered at both sites. Furthermore, they were also associated with the cult of Apollo, Artemis and the Dioskouroi – all divinities worshipped in Naukratis as well (Thomas *et al.* 2013, ¶2).

Challenging the Hellenization model in Naukratis

In order to proceed further it necessary to accept two premises concerning the meaning of objects. The first is the hypothesis that Tanagra figurines actually had an intrinsic value and meaning related to the Greek religious sphere. This theory has been rejected by a number of studies (Burr-Thompson 1966; Merker 2000, 131, 142) claiming the complete secularisation of Tanagra figurines that had no intrinsic connection with religion but which were, on the contrary, merely empty vessels for whatever meaning the dedicators wished to give them (Uhlenbrock 1993, 13–4). However, the archaeological evidence shows rather the opposite: the figurines were invariably associated with religious and funerary practices. Moreover, they were also usually related to the same divinities (Jeammet 2010, 134–79; 270–9). Consequently, it seems likely that the Tanagras had an intrinsic religious meaning linked with Greek customs (Burns and Higgins 2001, 21; Graepler 2010, 219; Verhagen 2012, 62).

The second premise concerns the connection between material culture, identity, and society. As previously stated, identity is shaped by material culture, practice, and personal choices. Although it is clear that society is, in a restricted context, the sum of all identities, the equation can be reversed: material culture, practice and choices express the society in which they are embedded. Therefore, it can be claimed that the Tanagras, in the limited contexts of Naukratis and Tarentum, expressed the society in which they were embedded.

Adopting the material culture perspective, the fact that Tarentum shows all the features of a proper Greek *polis* is not a surprise. The Laconian settlers who arrived in the 8th century found a native people, the Iapygians, who, although fierce in battle (as demonstrated by the tumultuous first years after the foundation and the terrible defeat inflicted on Tarentum in 473 BC (Dunbabin 1999, 149)), did not have cultural traditions robust enough for immediately recognisable features to withstand the progressive iconographical 'Hellenisation' of the city.

Notwithstanding the claim that in Hellenistic Egypt the two ethnic groups and cultures coexisted separately with little or no interaction between them (La'Da 2003, 163), Naukratis has shown interesting results in terms of material culture and practices dealing with Tanagra figurines, especially if compared with Tarentum:

1. Despite the different origins and contexts, the themes and use of the Tanagras in Naukratis appears similar to those in Tarentum.
2. The aforementioned uses seem to have been connected with the religious sphere and with the same Greek divinities, but also with their Egyptian counterparts.
3. Some elements in the Tanagra manufacture were Egyptian (*e.g.* plaster moulds).
4. Egyptian themes were found to be represented with Greek iconography.
5. The material culture shows a mixture of features taken from both worlds.
6. The contexts in which the Tanagras were embedded show mixed features too (*e.g.* grave goods; funerary stele).

From all these elements, and accepting the two theoretical premises, we can deduce from the study of Tanagras that Hellenistic Naukratis was an unsegregated, cross-cultural settlement in which the two elements, Greek and Egyptian, coexisted with a certain degree of equality. In this context, the Tanagras can be properly regarded as cross-cultural objects, because they physically embody the multiculturalism of Naukratis. Techniques, themes, and contexts were combined so that the society was merged to some degree as well.

The significance of this is worthy of further consideration. Given that Tanagra figurines seem to have been such a token of Greek material culture and practice, and consequently (accordingly to the equation) a token of identity, the fact that in the Naukratite production they were mixed (in technique, themes and context) might indicate some points regarding identity in the settlement. If objects which were universally so strictly connected with Greek identity had blended features in Naukratis, can we claim that in the limited context of the *emporion* a cross-cultural Greek-Egyptian identity existed, at least on a level of agency but not necessarily of intentionality (Antonaccio 2010, 38)? And if so, was it rooted deeply enough to affect even the tokens of Greek identity that were the Tanagras? Ultimately, was the Naukratite identity literally a cross-cultural identity?

Conclusion

The purpose of this research has been to evaluate issues concerning the stylistic variability of Tanagra figurines. The final goal is to satisfactorily answer the following research questions: how can we explain stylistic variability in the Tanagra production across the Mediterranean in the Hellenistic world? How were the Tanagras embedded in the cross-cultural context of the two settlements, and what explanations for their stylistic variability can we infer from this?

It is important to stress that significant sections of both cities still lie under the modern settlements, so that the current analysis cannot be exhaustive. Consequently, the interpretation requires a certain caution because the lack of documentation for Tanagras in certain contexts should not be used as an *argumentum e silentio* to claim the exclusive use of the artefacts in certain practices and their exclusion from others, at least not until a significant amount of different contexts have been discovered and analysed.

However, the evidence from this study suggests that the stylistic variability of Tanagras in Naukratis and Tarentum corresponded not only to a different cross-cultural context, but also to a different identity. I have argued that despite technical disparities due to different origins, wealth, and context, the production and consumption of Tanagra figurines in Naukratis and Tarentum show important common patterns that can be found in almost every Greek settlement where Tanagra figurines have been discovered. From this it has been claimed that the Tanagras are tokens of Greek identity, and that they express the society they are embedded in. From its material culture, Tarentum seems to have been a completely Greek city. However, the analysis of Naukratis has resulted in a more complex reality. Technique, iconographies, material culture and the contexts of the Tanagras were in a mixed Greek-Egyptian style, so that the image they express is that of a fully cross-cultural society. Moreover, having accepted the premise that the Tanagras are also tokens of a Greek identity that seldom integrated non-Greek features, and given that Naukratite figurines do have hybrid features, it follows that Naukratite identity must have been a Greek-Egyptian hybrid as well.

In conclusion, in order for further research to be undertaken, a greater number of comparative and interdisciplinary studies concerning Hellenistic Egypt, a complex and variegated reality in which people with different cultural roots interacted and mingled in everyday life, especially outside the royal palace, are required. For a better understanding of the period from a non-royal, cross-cultural viewpoint, it is then necessary to focus on 'folk' material culture with a multidisciplinary approach.

Archaeological data must become more central also to studies concerning identity and ethnicity. As in the case of this research, and as demonstrated by Hales and Hodos (2010) in their critical volume, the analysis of the relationship between specific categories of objects and identity can hold great relevance in improving the understanding of the socio-historical context. Furthermore, it may yield results that could not have been found through a survey based exclusively on theory and texts.

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13

Wadi Maghara: A Copper and Turquoise Mine on the Periphery

Nora Shalaby

Introduction

Wadi Maghara is an area of copper and turquoise mines located in the southwest mountain region of the Sinai Peninsula. It was frequented by ancient Egyptians from the Early Dynastic (*c.* 3000 BC) onwards and the rock inscriptions left behind are a testimony to these expeditions. Wadi Maghara has been frequently contextualised through inscriptions and writings etched on the rocks surrounding the mine site. Whilst undoubtedly an important source of information shedding light on several aspects of what have been regarded as 'state-run, organised' expeditions, an increased reliance on texts for the construction of a site's social landscape falls short on many levels. What is needed is a close and critical scrutiny of such textual sources at archaeological sites, in order to avoid a macro-level top-down approach that often reiterates the 'propaganda' of the upper echelons of an ancient society. As Bloxam (2006, 280) states:

> There is a need to formulate some fresh perspectives into the social context of raw material acquisition, particularly as an alternative to earlier interpretations based on 'the myth of control'.

This paper examines the site of Wadi Maghara using a micro-level bottom-up approach. This will supplement textual with archaeological data and present a contextual analysis of the site, its objects, and its structures within the larger framework of the Sinai Peninsula. A preliminary analysis of the flint tool assemblage, constituting the bulk of the material culture at the site, will be presented. The term flint will be used instead of chert to describe microcrystalline rock, as both have become more or less synonymous in Egyptology (Harrell 2012, 3). The site's assemblage of lithic mining tools lacks parallels in other mine sites in the region. This analysis will be a chance to tentatively outline what such a tool-kit entails, and the insights that can be gained into the social organisation, interaction, and exchange of cultures that was in place in this peripheral desert zone situated between Egypt and the Levant.

Sinai in context

Geology and landscape

The Sinai Peninsula (61,000 km^2), bordered to the north by the Mediterranean Sea, to the west by the shallow Gulf of Suez, and to the east by the deep Gulf of Aqaba, forms a bridge between the continents of Africa and Asia. Connecting them is a narrow strip of land to the north of the peninsula. The Sinai's varied landscape can be divided up into several geographical areas as one moves from north to south (Greenwood 1997, 2–3), including the Aeolian sand plains of the Mediterranean littoral, the rocky Tih Plateau in the central area of the peninsula, the sandstone valleys between the Tih Plateau and the Sinai massif, and the Sinai granite massif. In the broad belt of Nubian sandstone at the southern end of the central Tih Plateau, the majority of Sinai's copper and turquoise mines are to be found, including those of Wadi Maghara (Barron 1907, 169; Greenwood 1997). Further south in the Sinai massif, ancient Precambrian rocks also hold veins of turquoise and copper ores within the faults intersecting the rocks (Hume 1937; Garfunkel 1979, 63).

Occupation

Sinai has an arid desert climate with only sparse natural vegetation, a small amount of wildlife, and an annual precipitation, sometimes in the form of flash floods, of less than 100mm. Due to its inhospitable environment alternating between wetter and drier periods, Sinai has only supported a limited human population. The earliest traces are Acheulean bifaces from the Lower Paleolithic (Phillips 1987, 108). By the Upper Paleolithic, Ahmarian sites in the north, northeast, and south of the peninsula point to hunter-gatherer occupation and exploitation (Phillips 1987, 109).

Evidence for Neolithic occupation in the Sinai is found at a number of sites throughout the peninsula and can be divided into the desert Pre-Pottery Neolithic (PPN) A and B cultures. The main subsistence activity continued to be hunting and gathering, with no evidence for domestication of plants or animals (Rosen 2002, 24–25; 2011, 73). Arrowheads on blades, scrapers, burins, and awls constituted the main elements of the lithic industry (Rosen 2002, 25). Many of the PPNB (*c.* 7500 BC) sites, located in various parts of northern, central, and southern Sinai, were found situated next to flint deposits and close to copper and turquoise mines – factors which likely attracted people to these areas (Rothenberg 1979a, 110; Rothenberg 1979b, 137–138).

The introduction of domesticates around 5500 BC signals the beginning of the Timnian complex (Rosen 2009, 61; 2011, 73), a phase which corresponds to the Late Pottery Neolithic, Chalcolithic, and Early Bronze Age of the southern Levant (Rosen 2009, 61; Eddy and Wendorf 1998, 11). In its Early and Middle phases, it was a mobile herder-gatherer culture that, despite relying less on hunting, had not yet developed into a fully pastoral nomadic society (Rosen 2002, 26). The flint tools were more expedient and flake-based, with a lower occurrence of arrowheads compared to the proceeding PPNB (Rosen 2002, 27; 2011, 74). Copper metallurgy appeared during the Middle Timnian, with occasional copper objects found at several sites in southern Sinai (Rosen 2002, 28). Many of the Early and Middle Timnian sites were base camps situated in areas close to copper and turquoise mines (Rothenberg 1970, 15) and recent investigations have shown that the inhabitants of Sinai were innovators in early oven technology (Pfeiffer 2013). They also exploited good quality tabular flint, such as at the foot of Gebel Egma by the Tih Plateau (Rothenberg 1979a, 111), which was knapped into large fan scrapers and subsequently exchanged with Egypt and the Levant (Rosen 2014, 255). Tombs dating to *c.* 5000 BC in the plain of el-Qaa in southwest Sinai contained fragments of high-grade turquoise as possible burial goods (Close and Minichillo 2010, 832). This suggests that by this time the turquoise mines were already in the hands of a limited number of people privileged enough to have been able to place turquoise in their tombs (Close and Minichillo 2010, 840).

Located at the foothills of the Serabit el-Khadim mine just north of Wadi Maghara, Chalcolithic (Middle Timnian) site 1105, dated to *c*. 4216–3985 BC (Beit-Arieh 2003), is of particular interest due to its flint tool assemblage. The site was a campsite for miners, who procured turquoise nodules from the mountain rock of the galleries of Serabit el-Khadim by means of flint blades with triangular or trapezoidal cross-sections (Beit-Arieh 1980, 53; Beit-Arieh 2003). According to Beit-Arieh, the blades bear a close resemblance to the well-known Canaanite blades diffused in Chalcolithic and Early Bronze (EB) sites of the southern Levant. This, along with the presence of Canaanite ware within the campsite, led him to infer that the sites' inhabitants originated from the southern Levant and had gradually moved south to settle in southern Sinai with the intention of mining turquoise.

Basing her analysis on the flint tools from site 1105, Bloxam (2006, 288) further suggests that the stone tools at the Sinai mines, including 'pointed flint scrapers', show a standardisation and little variation in form as one moves from the Chalcolithic through to the dynastic period. The concept of a possible miners' ethnicity raised by Beit-Arieh, and the purported standardisation of tool production, are both noteworthy in considering the use and occupation of this mining space. These points will be revisited in the section on Wadi Maghara's flint tool assemblage.

By the EB (Late and Terminal Timnian), the Sinai exhibits many features of a fully pastoral nomadic way of life (Rosen 2002, 28; Thompson 1975). The majority of its inhabitants were likely practicing animal husbandry, production of tabular flint scrapers, and copper mining. The domestic lithic industry (apart from tabular scrapers) was mostly onsite production with little specialisation (Rosen 1997, 110; Thompson 1975). EB I sites in Sinai are scarce but by the EB II (*c*. 3000 BC) there is a far larger and more recognisable presence of sites in the peninsula, perhaps related to the rise of urbanism in the southern Levant (Beit-Arieh 2003; Rosen 2002, 33). Copper tools including axes and chisels are common finds in most of the excavated sites and evidence of copper smelting was found in at least three of them (Beit-Arieh 1983, 44).

By the 3rd dynasty (*c*. 2650–2575 BC) or possibly earlier as recent surveys of rock inscriptions in the region have suggested (Ibrahim and Tallet 2009) Egypt began to send expeditions from the Nile Valley and Delta to southern Sinai to procure copper and turquoise. It is believed that by this time many of the EB II sites were abandoned as a result of Egypt's growing influence in the region (Beit-Arieh 1983; Finkelstein 1995). In contrast, the workers' settlements and campsites that appeared adjacent to the mines, such as at Wadi Kharig and Wadi Maghara, contained remains of Egyptian pottery and copper smelting activity (Rothenberg 1979b, 164; Rothenberg 1987, 4). Evidence for Middle Bronze and Late Bronze occupation in Sinai (*c*. 2000–1200 BC), aside from the workers' settlements at the mine sites, is scarce (Rosen 1997, 111–112) and perhaps a feature of increasing Egyptian presence in the area.

The archaeological data indicates that different groups in the Sinai were partially engaged in the procurement of turquoise, copper, and tabular flint from the Late Pottery Neolithic up to the EB. There is also increasing evidence to suggest that, beginning with the Chalcolithic, they were part of the interregional exchange network spanning Egypt and the southern Levant (Rosen 2009, 62). Absence of reliable archaeological data, as well as the appearance of Egyptian textual sources, tells of possible appropriation, as part of the indigenous population's way of life could have been pushed to the margins. In contrast to this view, the archaeological data of Wadi Maghara and its association with Egyptian presence in the Sinai can suggest a more complex and nuanced scenario involving interaction rather than coercion and expulsion – a scenario that advocates engagement with the indigenous population, rather than forceful domination, played a role in the continual flow of raw materials from marginal regions to centres of power (Bloxam 2006, 297).

Wadi Maghara

First visitors

Wadi Maghara was possibly rediscovered by travellers trekking through the Sinai at the beginning of the nineteenth century. The numerous rock inscriptions engraved around the galleries attracted many to the mining region, including K. Lepsius (1852, 345) who visited the site in 1845, and V. Lottin de Laval (1855–59, 25) who published 18 of the inscriptions several years later. Between 1845 and 1865, Major C. K. Macdonald settled in the sites environs in an attempt to extract turquoise, causing heavy damage to the galleries and erasing many traces of ancient activity (Cooney 1972). Visitors, including H. Brugsch (1866), H. Bauerman (1869), G. Ebers (1872), and J. de Morgan (1896), continued to frequent the site throughout the nineteenth century, copying inscriptions and producing maps of the area. In addition, a topographical and geological study was undertaken by W. F. Hume and T. Barron in 1898–1899 (Barron 1907, 211).

The first 'proper' archaeological investigation of the site was carried out by W. M. Flinders Petrie and C. T. Currelly (Petrie 1906), which provided the majority of the archaeological material we have today. During the Israeli occupation of the Sinai, from 1967 to 1981, Wadi Maghara was included in the archaeological surveys carried out by B. Rothenberg (1970) and I. Beit-Arieh (2003) among others. Finally in the 1980s, M. Chartier-Raymond (1988) documented the site as part of a general survey of the southern Sinai mines. She recorded and illustrated the hilltop settlement at Wadi Maghara, describing its architecture and construction, and excavated a unit with six rooms.

Description

The Wadi Maghara mine site is located in the southwestern region of Sinai in Wadi Qenaia, several kilometers south of Serabit el-Khadim, to the east of the modern town of Abu Zenima. The mountain, where the turquoise and copper ore were found in antiquity, has a north-south orientation, and is approximately 600m in length (Chartier-Raymond 1988, 15). The galleries, consisting of several large openings into the rock of the mountain (Fig. 13.1), are found on the eastern side at a height of approximately 50m above the *wadi* (Fig. 13.2) (Chartier-Raymond 1988, 17). Today, the original shape and size of the galleries have been greatly disturbed by the mining activity of the late nineteenth and early twentieth century (Petrie 1906, 48; Chartier-Raymond 1988, 17). Stone-tool traces on the walls of the galleries are also no longer visible, although some of the ancient interior shafts can be detected (Chartier-Raymond 1994, 39). Nevertheless, Bauerman observed in a much earlier visit that 'in many instances the old faces of work may be seen' (1869, 33). He reported the walls of the galleries were covered with small and irregular tool-marks, which he suggests were the result of flint-flakes used by the ancient miners. He took note of numerous flint tools scattered throughout the valley and hill-sides, as well as within the galleries themselves (Bauerman 1869, 33).

Petrie documented two workers' campsites and a hilltop settlement at the mine (1906, 51–53). One of the campsites, located on a long terrace at the foot of the hill opposite the mine, is made up of several rooms with straight-sided walls (Fig. 13.3). Pottery sherds dated to the Old and Middle Kingdom were found alongside remains of turquoise and evidence for copper smelting activity (Petrie 1906, 51).

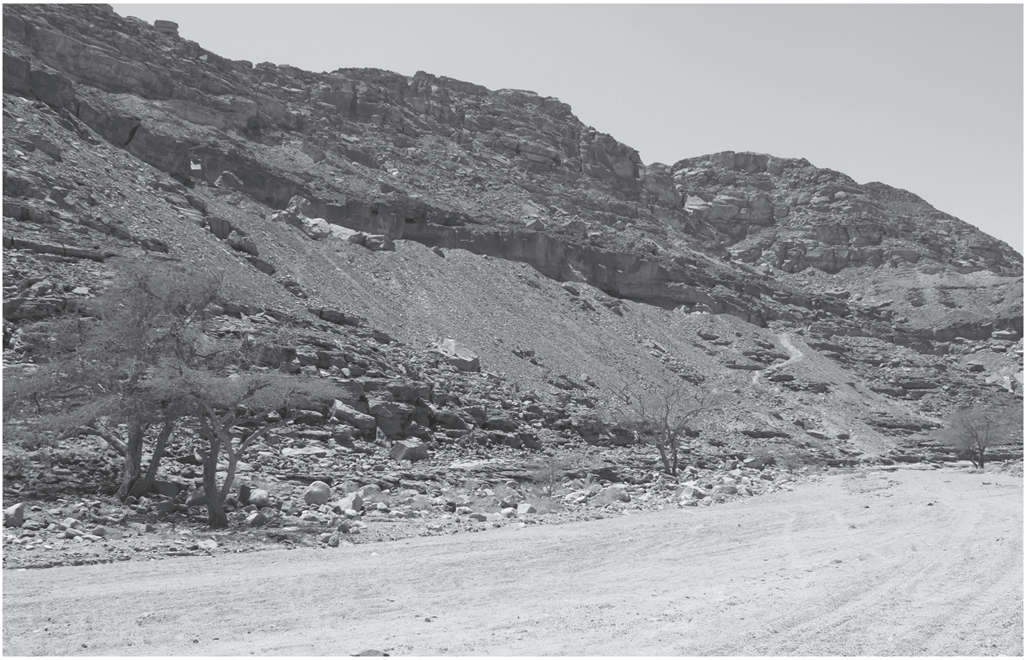

Figure 13.1. A view of the galleries on the east side of Wadi Maghara © author.

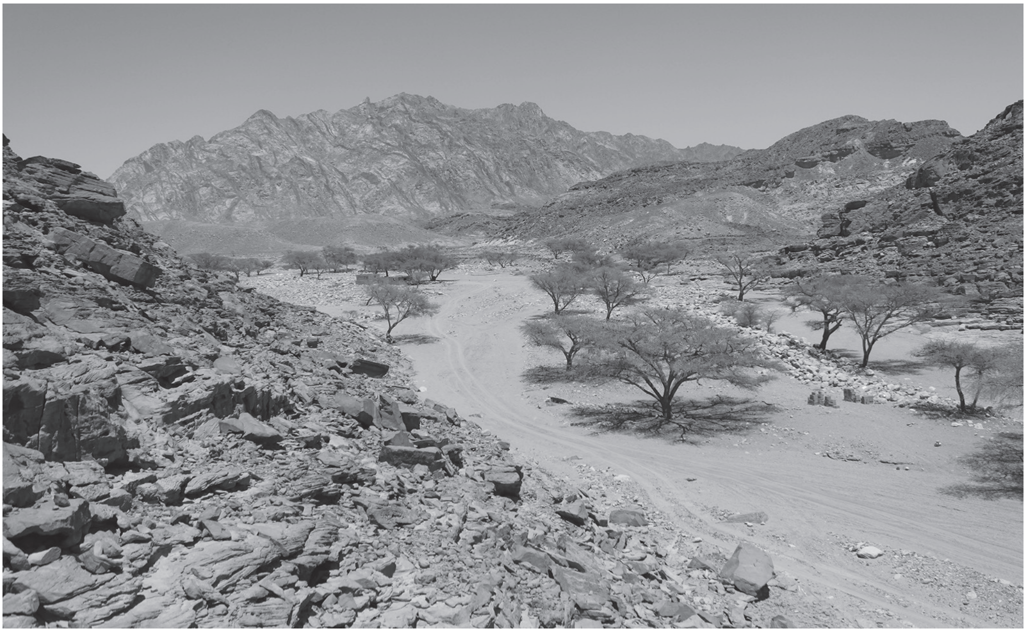

Figure 13.2. A view of the Wadi Qenaia © author.

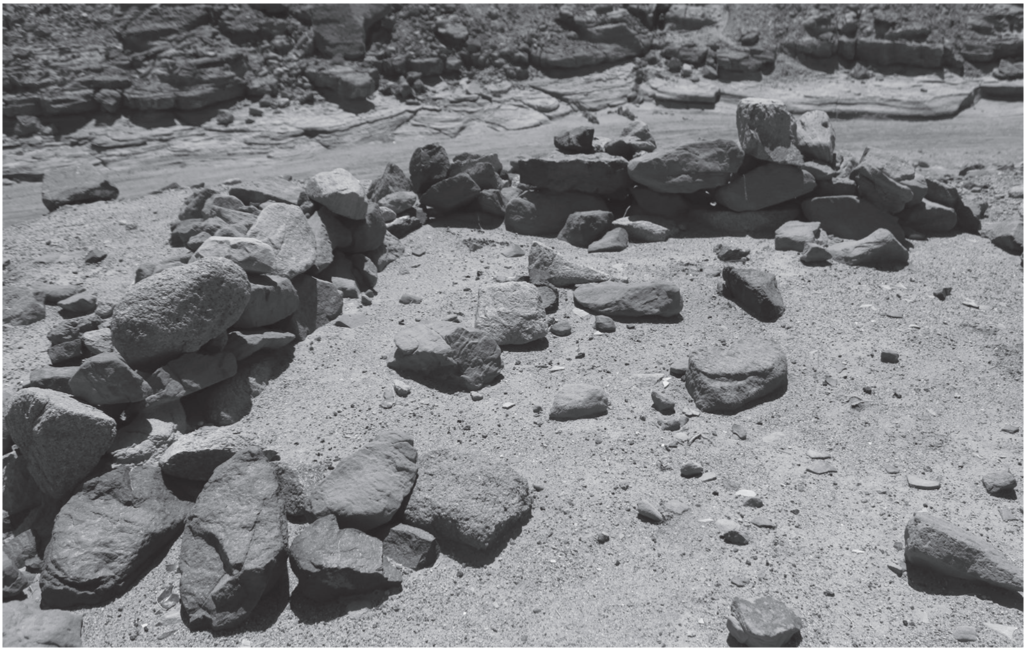

Figure 13.3. Part of the workmen's shelter at the bottom of the wadi © author.

The second campsite, also located close to the bottom of the *wadi* slightly to the north of the galleries, was constructed of rough boulder-stones on a small terrace. There were five rooms roughly square in shape with walls 60–76cm thick (Petrie 1906, 38). Pits within some of the rooms contained intact storage pots dated to the 12th dynasty (Petrie 1906, 52), which the workers likely left behind for subsequent visits. In addition to the pots, there was evidence for copper smelting activity with remains of tips of copper chisels and shells.

The third construction was the hilltop settlement located approximately 60m above the bottom of the *wadi*. A relatively large settlement with around 125 units (Petrie 1906, 51; a little over 100, according to Chartier-Raymond 1988) was constructed on a flat platform measuring 150–200 × 70 m, and was located opposite the mine galleries. In ancient times, the settlement was reached by a staircase, the remains of which were found on the northeastern side of the hill (Chartier-Raymond 1988, 17). Rooms of various sizes arranged in units are constructed in a continuous line around the circumference of the platform, with one unit abutting the other. Old Kingdom sherds and one copper object were among the finds within the settlement remains (Petrie 1906, 52).

Material culture

Wadi Maghara's material culture includes the architecture, the inscriptions, a small amount of pottery sherds, and a few traces of copper and turquoise. The lithic assemblage, however, stands out as being by far the most abundant worked material left behind at the site and it constitutes the main component for an attempt at reconstructing the mine's ancient social landscape.

Lithic assemblage

To examine the stone tool industry, the sequence of choices and events that were involved in stone tool production, and the type of organisation that it would have entailed will be highlighted. Such a *chaîne opératoire* is defined as 'a technological approach that seeks to reconstruct the organisation of a technological system at a given archaeological site' (Sellet 1993, 106). Light will be shed on the cultural transformations of the procured raw material, the chronological sequences required for it, and what mental processes were essential for such actions to be realised (Sellet 1993, 106). This chain of operations is a multi-step system that involves the procurement of suitable raw material, transport, reduction, use, repair, and eventual discard of the tool.

Background

The first batch of the Wadi Maghara flint tools were collected by Macdonald during his visit there in the 1850s. He gathered spear-heads, tools, and other stone implements from around the mine site and sent them to the British Museum in London (Cooney 1972). Numbering approximately 213 tools, they were not assigned find spots nor was their find spot described.

The remainder of the tools, which form the vast majority of the assemblage, were collected by Petrie (1906) during his survey and excavation of the site. These constitute the total number of 990 tools in the Wadi Maghara assemblage. The tools were found scattered throughout the cliffs surrounding the galleries with part of them within the workers' settlement. Many flint flakes along with pieces of basalt pounders were located in heap 'R' in the area below the 5th dynasty rock inscription of Niuserre (Petrie 1906, 51). Two other heaps of tools situated on the cliffs below the galleries were assigned the letters 'A' and 'B' (Petrie 1906, 50). In addition to these three find spots, there are other four possible locations written on the flint tools but not alluded to in any of the publications. These were named 'S1', 'S3', 'S4', and 'ST'. Out of a total of 990 flint tools, only 192 (*i.e.* approximately 19% of the assemblage) were given find spots by Petrie, making it somewhat difficult to conduct an in-depth intra-site spatial analysis of the flint tools. Nevertheless, a limited one can be attempted once the exact flint tool types are determined.

An additional shortcoming of the Wadi Maghara assemblage is the notable lack of core and debitage among the repertoire, which is likely a common feature in assemblages collected in the early days of archaeology. This could also be the result of collection bias on the parts of Macdonald and Petrie, who preferred to retrieve finished tools and were less interested in collecting what they likely regarded as waste products. Alternatively, this could possibly also be the result of off-site knapping, where the initial stage of production took place at the source of the raw material with only blanks brought back to the site. As such, it is pertinent that such variables, including lack of sealed archaeological contexts and possibility of sample bias, are addressed and factored in when the data is analysed.

Raw material procurement

The range of raw materials acquired by a specific group of people in order to produce flint tools can give us insight into aspects of their social organisation, mobility, and knowledge of their surrounding environment. Ancient communities were mostly selective in the types of raw material they chose, consciously choosing certain flint types over others for the manufacture of particular tools (Rosen 1997, 32). Choices of raw material were sometimes governed by the specific characteristics of the flint itself, including aspects such as size, colour, translucency, and grain size. Additional factors, such as distance of the settlement/camp-site to the flint source, accessibility, and security/safety hazards, may also have played a role. Knowledge about the sources utilised provides us with clues to the paths, circulation, and mobility of the people through the landscape within which they lived or worked (Andrefsky 1998).

Only a meagre amount of literature has been written about the sources of flint found throughout the Sinai; even known locations are only minimally documented. Nevertheless, in southern Sinai, two main areas with sources of flint are known. The first is in the Feiran region, which has outcrops of flint at the southern end of Gebel Qabiliat in the el-Qaa plains at the western edge of the peninsula (Close and Minichillo 2010, 832; Phillips 2003, 10), and in Wadi Geba on the western side of Wadi Serbal (Rothenberg 1979b, 137). The second area is found at the southern edge of the Tih Plateau and at the Gebel Dalal-Gebel Gurna scarp (Phillips 2003, 10; Rothenberg 1979b, 137). The types of flint found in these deposits include the Senonian yellow or black pebble flint and the Eocene brown tabular flint (Beit-Arieh 2003).

There is only a scant amount of information on the archaeological sites within Sinai at which raw material type and/or possible sources have been identified. Examples include the Upper Paleolithic site of Abu Noshra I in the Wadi Feiran region. Here, excavations uncovered flint tools that were chocolate-coloured and consisted mostly of blade and bladelets (Phillips 1987, 113). A grey, banded or speckled variety was found at another Upper Paleolithic site close by, Abu Noshra II (Phillips 1987, 114). The closest sources of flint for these sites would have been a 12–15km trek to the north or a 60km trek to the west, at el-Qaa plains (Phillips 1987, 116).

Another example is at the EB II site of Sheikh Awad, in southern Sinai, where the two types mentioned above are found – *i.e.* the Eocene brown tabular flint and the Senonian yellow or black pebble flint (Beit-Arieh 1981, 119; Beit-Arieh 1986, 42). The closest sources are 50 km to the north and to the west of the site, at the Tih-Egma Plateau and Wadi Feiran respectively. The 23 cores that were found at Sheikh Awad were all made from Senonian pebble flint (Beit-Arieh 1981, 120), suggesting that this type of flint was brought back to the site as nodules to be worked. The different types of flint within the Wadi Maghara assemblage were categorised on the basis of a macroscopic examination of their morphological characteristics, including colour, grain-size, homogeneity, smoothness, cortex, and inclusions. During this process, an attempt was made to keep the number of categories to a minimum, to avoid over-categorisation of types. This can be overcome by the use of broader and less-refined categories (Olszewski and Schurmans 2007, 191). The range of colours and grain sizes of the flint from the Wadi Maghara assemblage was divided into eight main categories, with subcategories for some (Table 13.1).

The numerous flint types within the assemblage suggest that a number of different sources were exploited for the production of stone tools. The main type appears to be the beige flint, constituting approximately 50% of the assemblage, and almost equally divided amongst the fine, medium, and coarse-grained varieties. It is likely that this ‘beige’ category is the same as the Senonian yellow pebble flint mentioned by Beit-Arieh; a common raw material in this region of Sinai (Beit-Arieh 2003; 1986, 42; 1981, 119). If the main deposit were at Wadi Feiran, around 60km south of Wadi Maghara, or at the Tih Plateau, around 50 km to the north (both figures calculated using the least-cost-path analysis in GIS), such a trek would have required considerable time and effort. It also suggests that raw material procurement was not expedient or opportunistic, but a planned endeavour requiring high mobility.

The second most common raw material type is the light-dark brownish hue, with the light/medium brown, fine-to-medium grained category as the highest subcategory. This type could perhaps correspond to the Senonian black pebble flint (Beit-Arieh 2003; 1986, 42; 1981, 119) and to the chocolate-coloured type from the site of Abu Noshra I in Wadi Feiran (Phillips 1987, 113). The same distances and implications apply as with the beige variety.

Table 13.1. Raw material category and percentage of tools © author.

Raw material category	**Subcategory**	**Number of tools**	**Percentage of total tools**
Range of caramel, beige and light-brown coloured very fine-grained, homogenous and/or translucent flint		76	7.6%
Beige	light beige/beige fine-grained flint, some translucent	151	15.2%
	light beige/beige, medium-grained flint	176	17.7%
	light beige/beige coarse-grained flint, some with orange brown patches and streaks	151	15.2%
		Total: 478	**48.3%**
Greyish-beige	coarse-grained	53	5.3%
	fine-grained	17	1.7%
		Total: 70	**7%**
Brown	light/medium brown fine/medium-grained flint	171	17%
	light/medium brown, coarse-grained flint	35	3.5%
	dark brown fine-grained, homogenous and/or translucent flint	32	3.2%
		Total: 238	**24%**
Yellowish Brown	medium to coarse-grained	105	10.6%
Fine-grained black		3	0.3%
Off-white, fine-grained flint		19	1.9%
Greyish brown tabular flint		1	0.1%

Another prominent category is the caramel, beige, very fine-grained homogenous and translucent flint. While only constituting 7.6% of the assemblage, its significance lies in the fact that this raw material does not seem to originate from Sinai. Parallels are common in Egypt, for instance, where a high-quality homogenous flint type was used for the production of bifacial knives (Hikade 2004), along with segmented blades, especially common during the Early Dynastic. Was this specific type of flint brought to Sinai as part of the Egyptian expeditions as a non-local source, and if so, for what purpose? Or is it simply a raw material source that we have yet to discover?

Types

A preliminary typology was made for the different technological tool types of the Wadi Maghara lithic assemblage. Tools were classified into functional typologies deduced from the final form of the tool. As mentioned above, only a limited amount of debitage forms part of the Wadi Maghara assemblage, either as a result of collection bias, or a true reflection of the limited core reduction processes that took place at the site. However, there are 14 cores, one cortical flake, and eight core rejuvenation flakes, which are made from a wide-range of flint types, particularly the coarse-grained beige and the greyish beige. None of these cores has been fully exhausted or shows discernible flaking patterns. Nonetheless, the presence of 248 tools with remains of cortex, 25% of the assemblage, demonstrates that some flaking did in fact take place at the site. It is also plausible that nearby communities perhaps performed the initial stages of core reduction and then distributed the prepared cores and blades to the mine site.

A brief preliminary overview of the different lithic tool types and their frequencies within the Wadi Maghara assemblage is presented in Table 13.2. A notable feature is that blades more than double the number of flakes within the assemblage, i.e. 674 blades to 302 flakes. Apart from simple, un-retouched blades, the most represented category is that of perforators (Fig. 13.4), approximately 17% of the assemblage. Closely following are pointed blades at 13.4%. Retouched blades are much less numerous than simple blades, which form a large group that can be divided into broader or narrower types. Segmented blades, some of which are made from the high quality caramel flint, also feature prominently in comparison to other categories, such as drills/micro-drills. Scrapers (Fig. 13.5), including end-scrapers and side-scrapers, make up a total of 8.3% of the assemblage. There are also 16 bifacial tools, mostly made from the high-quality homogenous flint, and they include a crescent drill piece (Fig. 13.6), three broken knives, and what appears to be a spear. Finally, there is an oval-shaped tabular scraper that is greyish beige in colour, with its entire dorsal surface covered in a reddish-brown chalky cortex.

Some of the components of this mining 'tool-kit' reflect the needs of a certain group of people charged with carrying out specific tasks. The high abundance of perforators and pointed blades, for instance, were likely used for the meticulous removal of turquoise from the surrounding rock – an idea previously put forward by Beit-Arieh (1980, 53) while examining blades found at Chalcolithic site 1105. However, the occurrence of a wide range of different tool types, apart from tools that were possibly directly involved in the mining process, indicates a number of differentiated activities carried out at the mine site. These could include day-to-day activities of a

Table 13.2. Frequencies of a sample of tool types © author.

Tool Type	**Number**	**Percentage**
Simple Blades	232	23.4%
Perforators	169	17%
Pointed blades	133	13.4%
Retouched Blades	60	6%
Segmented Blades	71	7.2%
Scrapers	82	8.3%
Notched pieces	26	2.6%
Drills/Micro-drills	6	0.6%

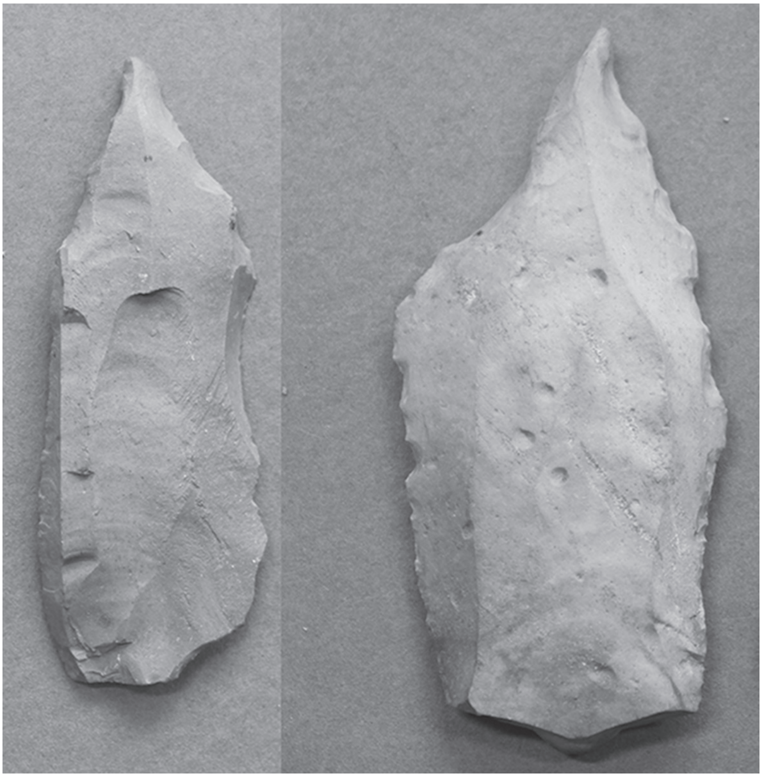

Figure 13.4. Perforators EA75232 and EA75230.7 (© The British Museum).

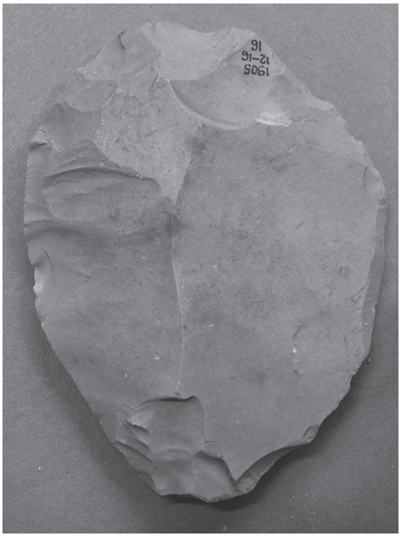

Figure 13.5. Scraper EA75230.11 (© The British Museum).

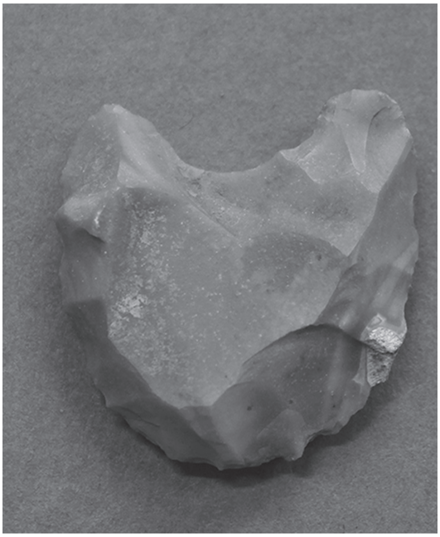

Figure 13.6. Crescent drill EA75224.35 (© The British Museum).

domestic nature, as illustrated by the presence of scrapers and notched blades, or the production of specific objects that required tools such as crescent drills.

While still in its preliminary stages of analysis, it is clear that a more detailed and in-depth look at the tool types and the nature of activities in place in this mining region can highlight several aspects of the site's social structure. A comparative study of the Wadi Maghara assemblage with flint tools from other sites within the Sinai, the southern Levant, and Egypt can perhaps help to address the ethnicity of the miners and whether they were in fact Canaanite settlers (Beit-Arieh 1980, 53), Egyptian workers, or part of the indigenous population. A comparative study can also highlight whether a visible continuation and standardisation of stone tool production is apparent throughout the extended time period that this area was occupied.

Discussion and conclusion

The Wadi Maghara flint tool assemblage faces problems in the lack of stratified deposits, a potentially biased sample, and minimal archaeological excavations in and around the site. This has left many questions open to debate. One of them is the assignment of an exact date for the tools: do they all stem from the same period, or do they reflect a prolonged occupation, beginning with the first Chalcolithic settlers and continuing to the last ancient Egyptian expedition (perhaps at the end of the Middle Kingdom)? There are some tool types that are indicative of a certain time period, such as the crescent drill piece, which has parallels in the Fayum and other sites in Egypt from the predynastic through to the Old Kingdom (Hikade 2004; Caton-Thompson and Gardner 1934, 68–69). However, many tools are attested over a much longer time span and this makes it difficult to pinpoint an exact timeframe for their production and use.

Despite these limitations, the flint tool assemblage from Wadi Maghara can still offer insights into the region, the groups of people, and the settlement, which remain relatively understudied. The possibility of recreating the societal microcosm of the site area relies on patterns that can be detected when examining the types of raw material that were procured, the on-site and off-site production of tools, the tool types that were manufactured, and their spatial distributions – all aspects which are not relayed to us through textual material alone. It is clear, for example, that there was a specific strategy in the procurement of raw material for the stone tools and its use for the tools knapping. Although *ad hoc* tools form part of the assemblage at Wadi Maghara, many show increased aspects of specialisation and standardisation, such as perforators and segmented blades.

Contextualising such observations within the Sinai peninsula; its various settlement phases, its varied inhabitants, and their subsistence activities, promises a more holistic view of the region. This might also disclose the ways in which different actors engaged with one another, either by competing for space around the mining region, or interacting and negotiating on a more local level.

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14

Imaging Ancient Egyptian Crocodile Mummies from Hawara

Stephanie Atherton-Woolham

Introduction

In the Late-Roman Period, live and deceased crocodiles were subjected to ritual treatment as a result of their sacred status, particularly in the Faiyum region. Classical literature cites a single cult crocodile provided with jewellery, food, and a sacred enclosure, while archaeological remains demonstrate that many other crocodiles, usually juvenile individuals of a variety of sizes, were mummified upon death as votive offerings. The paucity of ancient Egyptian literary evidence relating to such practices means that the mummified remains are the only surviving source of information regarding the materials and methods used in animal mummification.

During research for the Ancient Egyptian Animal Bio Bank at the University of Manchester (McKnight *et al.* 2011), non-invasive radiographic imaging techniques (X-ray and CT) were used to describe the contents of votive animal mummy bundles, amongst which were crocodiles excavated by W. M. Flinders Petrie at Hawara. The contemporary published report (1889) was a short summary of the findings of the crocodile cemetery, with no individual assessment for each mummy; a stark difference to the reports of human cemeteries excavated by Petrie. This recent research aimed to highlight individual zooarchaeological data, notably bundle content, identification of species, and Minimum Number of Individuals (MNI), alongside mummy bundle construction methods, in order to increase our knowledge of votive animal mummy bundles, often neglected in early excavation reports.

Crocodiles as 'divine manifestations of power' (Silverman 1991, 13) first appeared in the Early Dynastic, in which evidence of the earliest representations of Sobek as a crocodilian water and fertility deity are found (Brovarski 1984, 995; Wilkinson 1999, 279–98). Sobek was the resident deity in the city of Shedyt (Faulkner 1969, 84) and the Faiyum region in general (Petrie *et al.* 1913, pl. 2), where, according to Herodotus, a single cult crocodile was revered during the Late Period (*c.* 450 BC). The treatment of this individual involved daily adornment with jewellery and the provision of food, followed by mummification upon death and interment in a sacred catacomb (Waterfield 1998, 122). Evidence for the intentional rearing of juvenile individuals, thought to be for the production of votive mummies, was discovered at Medinet Maadi as a nursery area for hatchlings.

The area next to the temple would have housed the crocodiles before they were dispatched, mummified, and buried in large quantities (Bresciani 2005, 202–205) – a practice comparable to other votive animal species (Ikram 2005; McKnight 2010). Even in death, mummified crocodiles continued to play a role in cultic practice, acting as oracular devices and as a focal point for

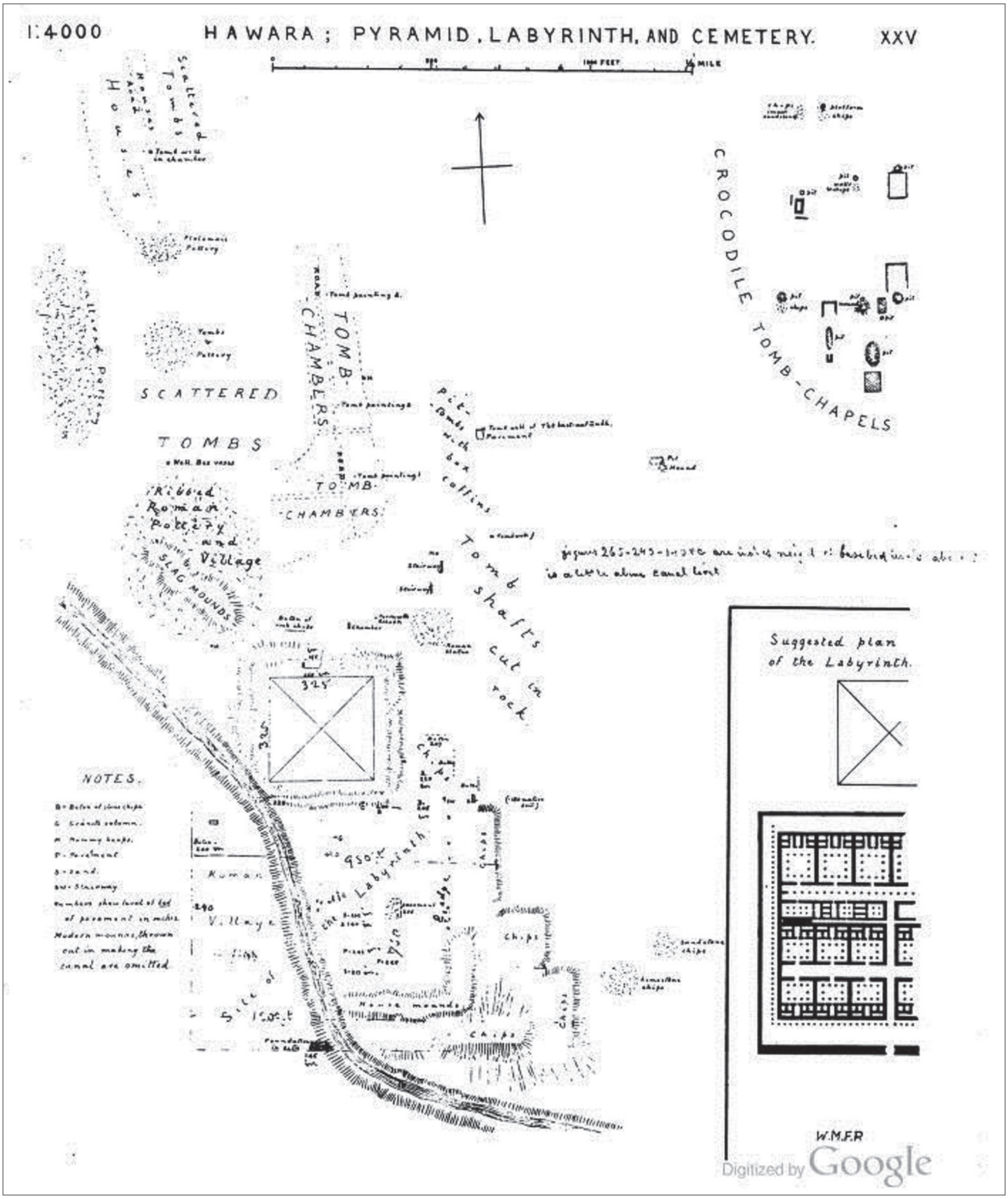
1:4000
HAWARA; PYRAMID, LABYRINTH, AND CEMETERY.
XXV
1000 FEET
¼ MILE
Scattered Tombs
Houses
Ptolemaic Pottery
Tombs & Pottery
SCATTERED TOMBS
ROAD
TOMB-CHAMBERS
TOMB CHAMBERS
Pit-tombs with box coffins
CROCODILE TOMB-CHAPELS
Ribbed Roman Pottery and Village
SLAG MOUNDS
Tomb shafts cut in rock
325
NOTES.
Roman Village
Site of the Labyrinth
chips
Suggested plan of the Labyrinth.
W.M.F.R.

Figure 14.1. Map of the Hawara landscape showing the crocodile cemetery to the northeast (Petrie 1889, pl. 25).

worship in temples and at shrines (Gazda 1983). The frequency of temples and necropoleis dedicated to crocodilian deities at sites such as Hawara, Tebtunis, Magdola, Kom al-Khamsin, and Theadelphia highlight the importance of the crocodile cult in the Faiyum region, likely an influence of the geographical proximity to water, in particular the Bahr Yusuf and Lake Moeris (Bresciani 2005, 203).

The discovery of the crocodile cemetery at Hawara is attributed to Petrie, who undertook two seasons there: the first in 1888–1889, privately funded by Jesse Haworth and Martyn Kennard, and the second in 1910–1911, working on behalf of the British School of Archaeology in Egypt. He noted its location to the northeast of the human cemetery (Petrie 1889, pl. 25; Fig. 14.1), including some interments in 12th dynasty human tombs (Petrie 1889, 63). The crocodile mummy bundles varied in terms of size, ranging from hatchlings to individuals measuring over 15 feet in length, and content, with complete crocodile mummies and isolated skeletal elements, in addition to pseudo mummies composed of non-skeletal material, such as eggshell and plant material (Petrie 1889, 10). Botanical examination by Percy Newberry discerned that such mummy bundle inclusions were extant Egyptian species, notably Egyptian sugar cane, sea club-rush, and Phoenician juniper (Petrie 1889, 52).

No information regarding Petrie's study method was present in the published report (1889) and minimal attention was paid to the zooarchaeological remains, according to the excavation style of the time. Despite the early applications of X-ray on animal mummies (Holland 1937; König 1896), this technique was not available in the field until much later, due to the size and importable nature of the equipment. Therefore, it is logical to assume that unwrapping remained the method of identification during these excavations. Currently, imaging is the optimum tool favoured in mummy studies. It provides the initial non-invasive insight into the content of wrapped mummified bundles and is particularly important for museum-based research, where non-invasive techniques are favoured to preserve the collection (Atherton 2012; Atherton-Woolham and McKnight 2014; McKnight 2010; McKnight and Atherton 2014).

This paper aims to employ modern investigative imaging techniques to add weight to Petrie's observations at the Hawara crocodile cemetery, using mummies recorded in the Ancient Egyptian Animal Bio Bank, a research project recording animal mummies in museum collections outside Egypt, based at the University of Manchester (McKnight *et al.* 2011).

Materials

The study group comprises 13 mummy bundles from the collections at the Manchester Museum and Touchstones, Rochdale. All were externally identified as crocodile mummies and documented as finds from the site of Hawara by the holding institutions. Petrie dated these to the Roman Period, due to their association with the Roman 'Faiyum Portrait' mummies excavated at the same site, and they were all believed to have been manufactured as votive offerings. All the mummies were donated to the collections between 1910 and 1911 via the British School of Archaeology in Egypt, with the exception of AEABB075, which was donated to the Manchester Museum by Jesse Haworth as a result of the 1888–1889 season (Table 14.1).

Methods

Imaging techniques were twofold, photographic and radiographic. Photography was carried out using a Canon EOS digital SLR at the holding institutions. The study group was then subjected to digital radiography (DR) (YSIO Fluorospot Compact (Siemens Medical System, Malvern, Pennsylvania, USA) 57kV, 1mAs, focal spot size 0.6 mm) and computed tomography (CT) (Lightspeed 64-row spiral MDCT (GE, Milwaukee, USA) 120kVp, 200mAs, pitch 0.969:1, rotation 0.6s, 0.625 mm slice thickness) at the Manchester Royal Infirmary.

Table 14.1. Information relating to the Ancient Egyptian Animal Bio Bank and holding institution within the study group © Ancient Egyptian Animal Bio Bank.

AEABB Number	Holding Institution	Museum Identifier	Provenance	Acquisition Details
067	Manchester Museum	100/1, EA19/1	Hawara, Roman Period	British School of Archaeology in Egypt, 1911
068	Manchester Museum	100/2, EA19/2	Hawara, Roman Period	British School of Archaeology in Egypt, 1911
075	Manchester Museum	3005	Hawara, Roman Period	Donated by Jesse Haworth, 1887–8
079	Manchester Museum	5373c	Hawara, Roman Period	Collected by W M F Petrie (British School of Archaeology in Egypt, 1910–11) and donated to Manchester Museum
080	Manchester Museum	5373d	Hawara, Roman Period	Collected by W M F Petrie (British School of Archaeology in Egypt, 1910–11) and donated to Manchester Museum
089	Manchester Museum	5373b	Hawara, Roman Period	Collected by W M F Petrie (British School of Archaeology in Egypt, 1910–11) and donated to Manchester Museum
137	Touchstones, Rochdale	208.21.1	Hawara, Roman Period	W M F Petrie, 1911
138	Touchstones, Rochdale	208.21.2	Hawara, Roman Period	W M F Petrie, 1911
139	Touchstones, Rochdale	208.21.3	Hawara, Roman Period	W M F Petrie, 1911
140	Touchstones, Rochdale	208.21.4	Hawara, Roman Period	W M F Petrie, 1911
141	Touchstones, Rochdale	208.21.5	Hawara, Roman Period	W M F Petrie, 1911
142	Touchstones, Rochdale	208.21.6	Hawara, Roman Period	W M F Petrie, 1911
143	Touchstones, Rochdale	208.21.7	Hawara, Roman Period	W M F Petrie, 1911

Results and discussion

The mummy bundles were found to be elongated (between 150 and 465 mm) and relatively thin in form (between 29 and 65 mm). The study group undoubtedly represents the smaller crocodile mummy bundles excavated at Hawara rather than the ‘monsters’ described by Petrie (1889, 10). This is likely to be the result of intentional selection of material for dissemination to museums and the logistical ease of exporting small artefacts out of Egypt.

A variety of states of preservation were observed, from unwrapped to partially and fully wrapped (Table 14.2). Any damage was likely to have occurred as a result of a combination of excavation, transportation, storage, and display, or the result of previous unwrapping and poor handling. Research as part of the Ancient Egyptian Animal Bio Bank showed that small crocodile mummy bundles were often fragile, especially when compared with non-crocodilian animal mummies of a similar size (Atherton 2012). Overall, imaging demonstrated that the study group contained both true (containing skeletal material) and pseudo (containing non-skeletal material) mummy bundles with a ratio of 7:6 respectively (McKnight and Atherton 2014).

True mummy bundles

The skeletal material was identified as *Crocodylus niloticus* (Nile crocodile). Two mummy bundles contained complete individuals. Both had lost the end of the tail and exhibited fractures in the distal thorax (AEABB067) and proximal tail (AEABB068), purported to be post-mummification damage (Fig. 14.2). Two further mummy bundles contained incomplete skeletal remains in the form of a single vertebra (AEABB137) and a single osteoderm (AEABB140) (Fig. 14.3), whilst two other mummy bundles contained compressed and disarticulated skeletal material, which was unidentifiable (AEABB142-3) (Fig. 14.4). Overall, the content of these mummy bundles correlated with those recorded by Petrie at Hawara (1889, 10). However, one mummy bundle (AEABB075) contained an unidentifiable *Serpentes* (snake) species wrapped within a crocodilian shaped mummy bundle. Animal mummy bundles displaying different external appearances to content are known (Ikram 2005, 14), although this is the only example within the study group and in the Ancient Egyptian Animal Bio Bank, to date.

Table 14.2. Current preservation states within the study group © Ancient Egyptian Animal Bio Bank.

Bundle Assessment	**Frequency**
Completely wrapped	3
Partially unwrapped	8
Unwrapped	1
Too damaged to assess	1

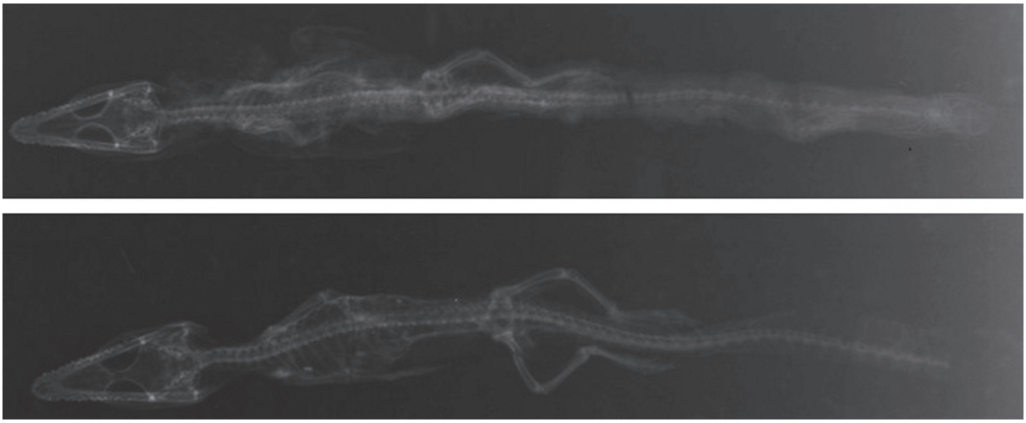

Figure 14.2. Radiography of AEABB067 (lower) and AEABB068 (upper) showed complete Crocodylus niloticus (Nile crocodile) individuals with post-mummification fractures © Ancient Egyptian Animal Bio Bank.

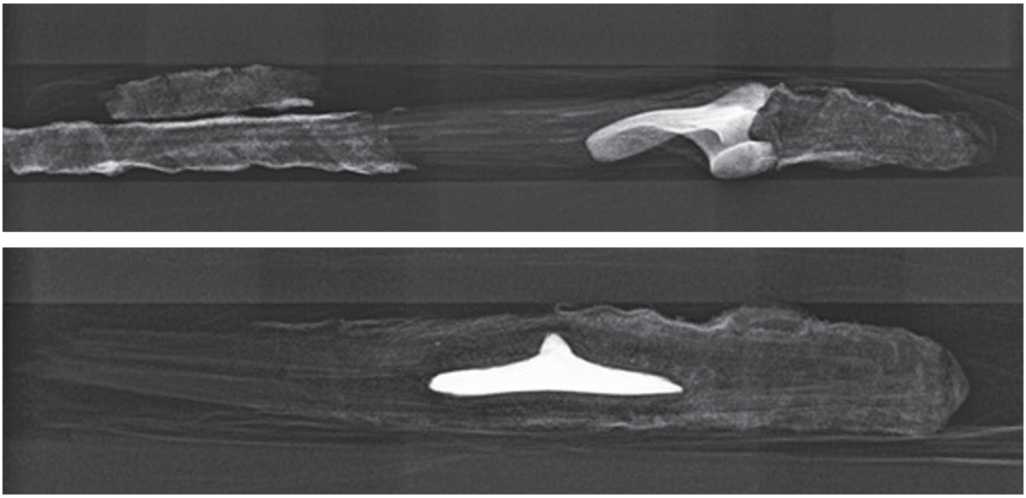

Figure 14.3. Radiography of AEABB137 and AEABB140 that demonstrated isolated skeletal elements in the form of a vertebra (upper) and an osteoderm (lower) respectively, both from a Crocodylus niloticus (Nile crocodile) © Ancient Egyptian Animal Bio Bank.

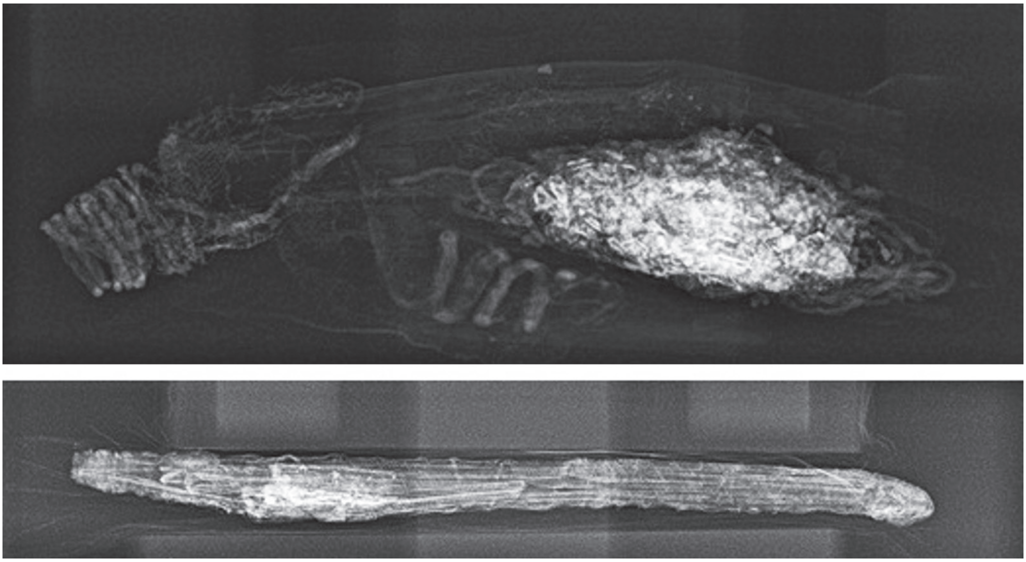

Figure 14.4. Radiography of AEABB142 (upper) and AEABB143 (lower) both showed the remains of unidentifiable, fragmented skeletal material © Ancient Egyptian Animal Bio Bank.

It is possible that Petrie overlooked this anomaly, instead referring to this bundle as one that contained isolated bone (1889, 10).

The true mummy bundles that contained complete individuals did not require supplementary material, whereas the mummy bundles that contained skeletal elements (*i.e.* less than one complete individual) were accompanied by *Cyperus papyrus* (papyrus sedge) inclusions. This organic

Table 14.3. Composition of true mummy bundles within the study group. © Ancient Egyptian Animal Bio Bank.

True Mummy Bundle Types	**Frequency**	***Cyperus papyrus* Inclusion**
Complete, identifiable individual	2	0
Incomplete, identifiable individual	2	2
Unknown completeness yet identifiable individual	1	1
Fragmented, unidentifiable individual	2	2

material provided the form and rigidity required for the construction of a stable crocodilian shaped mummy bundle (Table 14.3). The botanical identification did not mention the use of *Cyperus papyrus* in crocodile mummy bundles (although this was present at Hawara in other contexts). Instead, the use of *Saccharum aegyptiacum* (wild Egyptian sugar cane), which did not appear in Egypt until the mid-eighth century (Galloway 2005, 24), was recorded. It is possible that there was some confusion about the two plant species which both exhibit rigid characteristics, although the lack of nodes at regular intervals displayed on radiographs present in *Saccharum aegyptiacum* indicated that *Cyperus papyrus* was more likely.

Anatomically, the complete individuals filled the linen bundle, which was a common feature noted in other crocodile mummy bundles in the Ancient Egyptian Animal Bio Bank. The assumption was made that AEABB067, presented in an unwrapped state, was originally positioned in the same manner within linen wrappings (Fig. 14.2). The isolated or fragmented skeletal elements were positioned in the mid-section of the mummy bundle, approximately in the anatomical position of the neck (Figs 14.3–14.4). The reason for the position of the skeletal elements is unknown. It is possible that this placement was practical and prevented loss of the crocodilian content, although the position of the skeletal remains may be comparable with that of the heart of a crocodile, thus having ceremonial connotations.

Pseudo mummy bundles

Five bundles contained non-skeletal material (with the exception of *Cyperus papyrus* as discussed above), identified as eggshell, likely to be crocodilian in origin (Fig. 14.5), and comparable to the excavation report (Petrie 1889, 10). CT also identified a single example of linen, soaked in a radiodense, possibly resinous, substance, employed as an internal facial accoutrement, thought to be a false eye based on the anatomical position (Fig. 14.6). As no descriptions of the construction techniques of the mummy bundles were recorded by Petrie, it is unknown if the creation of false features was common at Hawara. However, as this addition was only discovered through the use of imaging, it is not surprising that this went unnoticed.

Post-mummification damage enabled internal construction methods to be visualised macroscopically in some instances. For example, in AEABB138, eggshell was visible within a small linen bundle positioned in the mid-section, as observed in true mummy bundles that contained isolated skeletal elements. This package was encased within the crocodilian shaped bundle, the form of which was created from *Cyperus papyrus* (Fig. 14.7). In completely wrapped mummy bundles, radiographic investigation was unable to visualise if eggshell content within the bundle was individually wrapped. Therefore, the tandem use of macroscopic and radiographic investigation proved useful in ascertaining bundle construction methods.

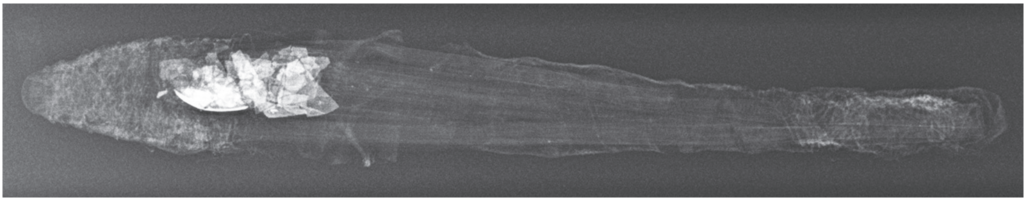

Figure 14.5. Radiography of AEABB089 demonstrated non-skeletal content in the form of eggshell © Ancient Egyptian Animal Bio Bank.

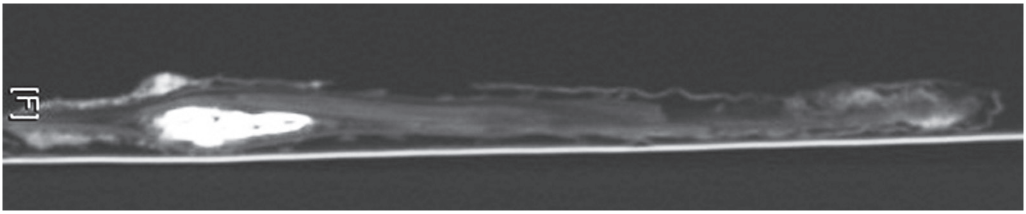

Figure 14.6. CT sagittal reformation of AEABB089 highlighted a radiodense anomaly in the anatomical position of the eye, thought to be a false accoutrement constructed of resin-soaked linen © Ancient Egyptian Animal Bio Bank.

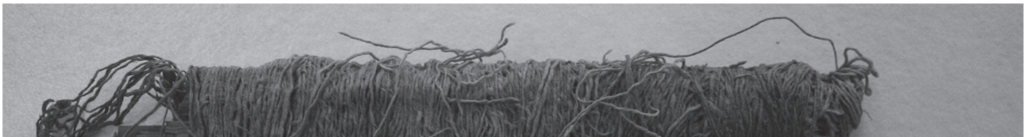

Figure 14.7. Macroscopic examination of AEABB139 demonstrated that the small internal package found to contain eggshell by use of radiography, was individually wrapped in linen and a vegetal material before being contained within the Cyperus papyrus and final linen layer © Ancient Egyptian Animal Bio Bank.

Wrapping and construction techniques

There was no information relating to the wrapping technique in Petrie's excavation report, although the study group showed some variation. The outer layers of the crocodile mummy bundles were plainly wrapped with no evidence of external false features or intricate patterns and were composed of various linen weaves in different colours and conditions. Two external wrapping techniques were apparent:

1. A horizontal wrapping technique, often at a 45º angle, with one or more strips of linen, sometimes coated with a black resinous substance.
2. A linen shroud, sometimes multiple shrouds applied in different areas, bound by linen string positioned in concentric horizontal bands at regular intervals. A surplus of linen string was often visible at the proximal and distal ends of the mummy bundle.

It appeared that type 1 was a much simpler technique and was used to wrap complete individuals (Fig. 14.8), as seen in other complete crocodile mummy bundles held in the Ancient Egyptian Animal Bio Bank. The rigidity of the complete mummified crocodile provided a sound structure around which linen was bound without the need for structural inclusions to provide the form. However, type 1 also acted as an under-layer around pseudo materials, such as *Cyperus papyrus* (AEABB143) and shrouds and linen string layers.

Type 2 was used in mummy bundles that contained less than one complete individual accompanied by pseudo materials (Fig. 14.9) or pseudo materials alone. Due to the lack of longitudinal structure, isolated or fragmented skeletal elements and eggshell required *Cyperus papyrus* to create the crocodile shape in all cases. Occasionally *Cyperus papyrus* was bound together by an unknown flattened vegetal material, prior to being wrapped in linen (Fig. 14.10). This was recorded in other animal mummy bundles, for example in fish mummies from Esna, where its use as a binding material was demonstrated. It was likely to have been a native plant and therefore widely available to the embalmers for such purposes.

Conclusions and future work

The Hawara study group demonstrates that mummy bundles held in museum collections predominantly support the brief observations recorded by W. M. Flinders Petrie during excavation (1889, 10). The major discrepancies in his published report were the use of *Saccharum aegyptiacum* and the lack of a mention of the use of *Cyperus papyrus* (Petrie 1889, 52), as this was identified in almost all the mummy bundles containing less than one complete individual. Clearly further work is required in this particular area.

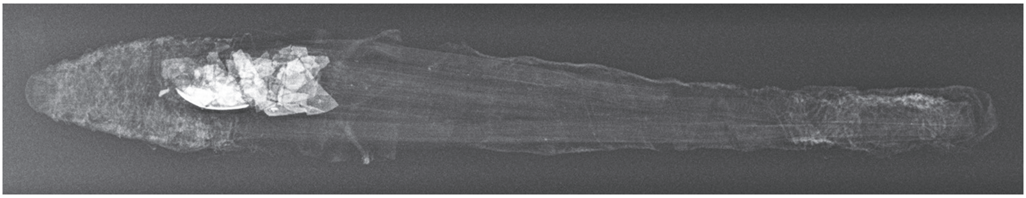

Figure 14.8. AEABB068 demonstrated the type one wrapping technique observed in the Hawara study group © Ancient Egyptian Animal Bio Bank.

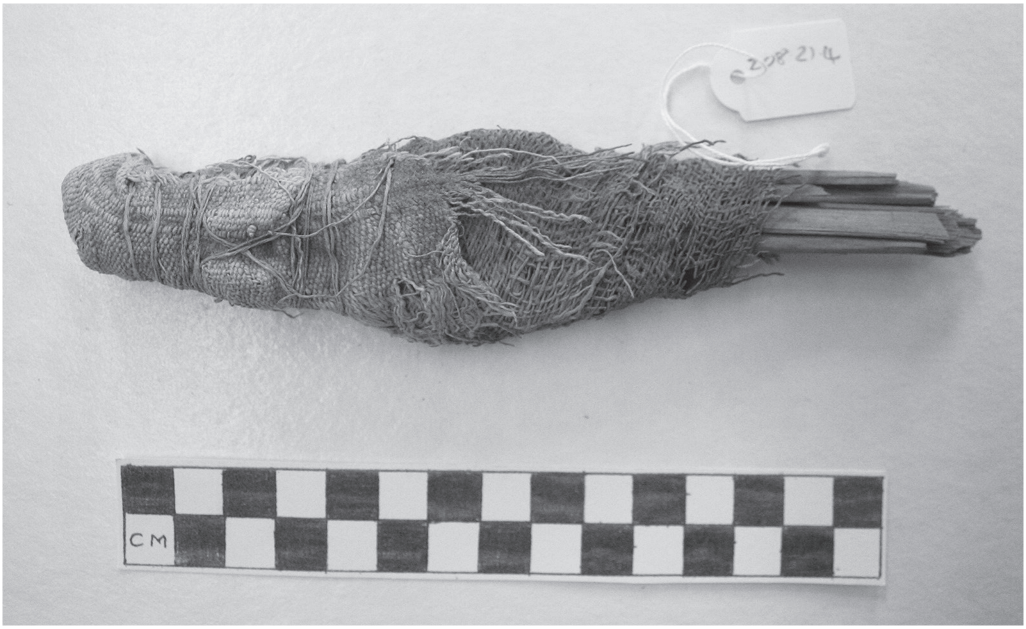

Figure 14.9. AEABB140 demonstrated the type two wrapping technique, which was used in mummy bundles that contained less than one complete individual accompanied by pseudo materials such as Cyperus papyrus © Ancient Egyptian Animal Bio Bank.

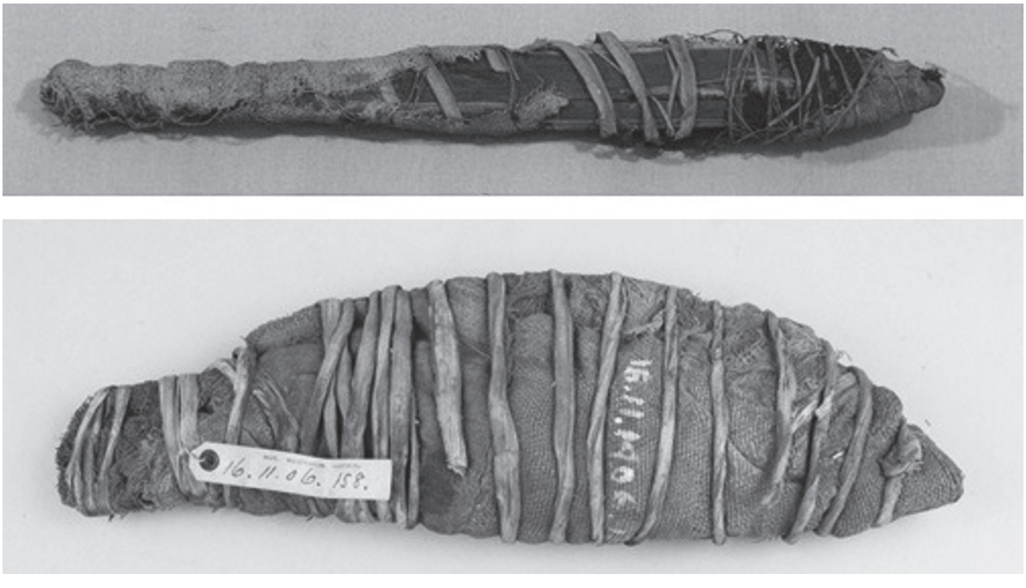

Figure 14.10. The use of the unidentified vegetal material employed in AEABB080 (upper) was also demonstrable in other animal mummies, for example, a fish mummy from Esna (lower), held in the World Museum Liverpool collection (AEABB652) © Ancient Egyptian Animal Bio Bank.

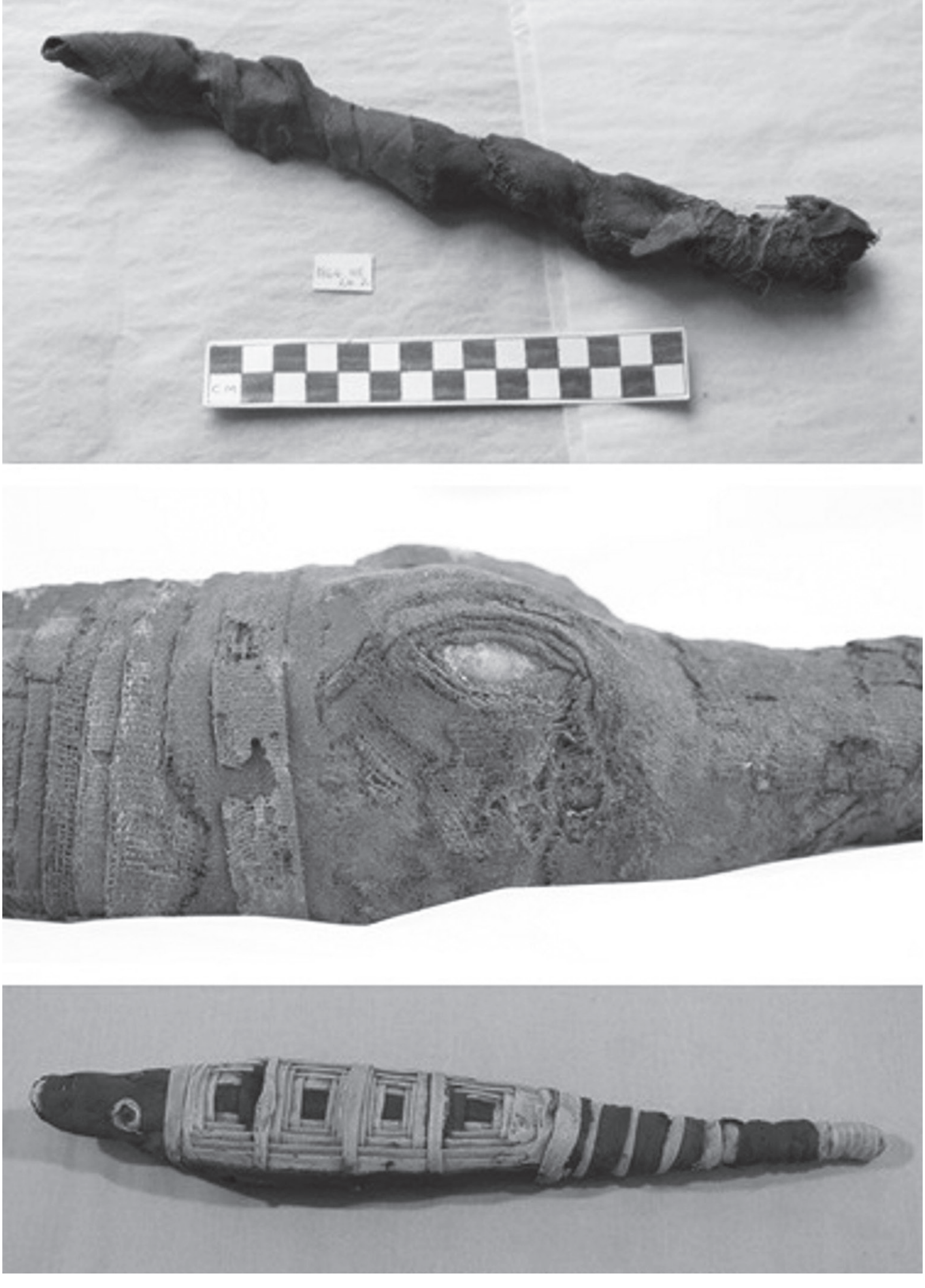

Figure 14.11. The simple technique for complete individuals (AEABB201) (upper) and more elaborate bundles making use of false eyes, and painted and modelled facial features (AEABB677) (central); in addition to post-cranial linen patterns (AEABB073) (lower) © Ancient Egyptian Animal Bio Bank.

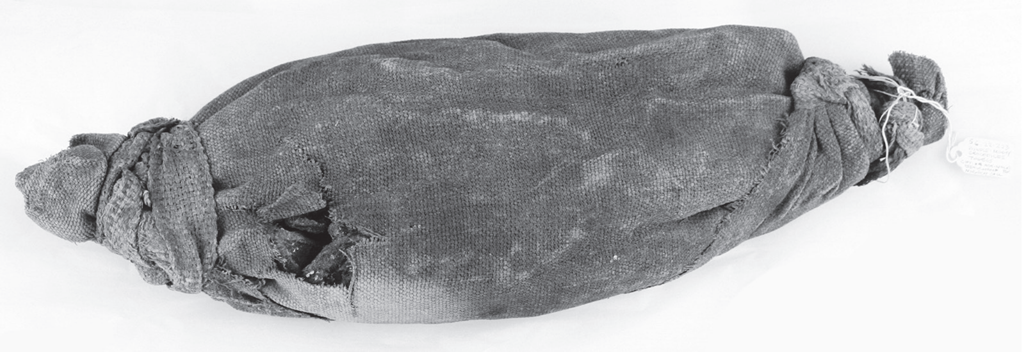

Figure 14.12. Mummy bundles containing multiple crocodilian juvenile individuals were not recorded in the Hawara study group, although they are known to exist, exemplified by AEABB659 © Ancient Egyptian Animal Bio Bank.

Overall, the Hawara mummy bundles were plainly wrapped, yet varied in content and construction, and are comparable with mummy bundles from other Egyptian animal catacombs, notably Maabda. The two construction techniques seen in the Hawara study group are applicable to many small crocodile mummy bundles currently held in the Ancient Egyptian Animal Bio Bank: a simple technique for complete and almost 'wand-like' individuals, with bundles containing isolated or fragmented remains requiring a more complex construction method. Often, though not in the case of the Hawara study group, the latter demonstrated a greater use of external false accoutrements, such as false eyes, painted or moulded features, and post-cranial linen patterns (Fig. 14.11). In addition, amorphous mummy bundles that contained multiple juvenile crocodilian individuals were recorded (Fig. 14.12), although none were securely from Hawara.

The research undertaken by the Ancient Egyptian Animal Bio Bank project is still in its infancy, although small studies such as this have highlighted its importance as a tool in the study of multiple museum collections. In addition, the imaging techniques employed allow accurate comparison with excavation reports and archival material, which enhances our knowledge of votive animal mummy bundles from across Egypt.

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15

The Middle Kingdom Society Seen through its Supply Pattern

Martina Bardoňová

Introduction

In recent years, research in the field of the ancient Egyptian economy in the earlier historical periods has blossomed. Even though the economy was never completely neglected, it seems that Egyptologists have only recently started to give it the attention that it deserves. Many economic topics have been addressed in recent years, such as questions of the macroeconomic structure, and interconnections between social and economic structures (*e.g.* Baines and Yoffee 1998; Bleiberg 1996, 2007; Cooney 2007; Eyre 2009, 2011; Helck 1975; Janssen 1975, 1982; Kemp 2006, 2013; Lehner 2000; Moreno García 1999, 2006, 2008, 2014; Papazian 2013; Richards 2005; Warburton 1997, 2010; Warden 2014). Rations have been studied through the measurements of bread moulds; research has been carried out on cereals and their transformation into final products (see *e.g.* Heinrich and Cappers 2014; Wade 2014; Warden 2014), and studies have been released focusing on expeditions to obtain raw materials and luxury goods (see *e.g.* Aubet 2013; Caubet and Yon 2006; Diego Espinel 2011, 2013; Flammini 2001; Harell 2012; Klemm, Klemm, Murr 2002). Besides the previously-mentioned areas, some scholars also carried out studies focusing on structures used for the storage of foodstuffs (see *e.g.* Kemp 1986, 171–179; Florès 2013).

Previously, Egyptologists considered the ancient Egyptian economy had been based on a large-scale redistribution of goods via the central government and its associated institutions (see *e.g.* Bleiberg 1996; Helck 1975; Janssen 1975, 1982). More recently, scholars preferred to see the role of the central government as similar to a kind of motor stimulating the economy (Warburton 1997, 2010). Since then, Egyptologists have sought a better model, one based on patrimonialism and patronage. Both consider the economic and entire social systems as composed from relatively small, interacting units. In patrimonialsim, those units were represented by households, and in patronage, by groups of clients assembled around their patron (see e.g. Eyre 2011; Lehner 2000; Warden 2014).

The term ‘economy’ is itself problematic. For ancient Egypt, it is impossible to distinguish clearly between economic and administrative activities. The vast majority of traces of economic activity at our disposal are connected to their administration. For example, grain storage can be equally considered as a part of the administration and as an economic activity.

The importance of cereals as a commodity for ancient Egyptians determined the significance of the structures in which they were stored. Granaries were significant in both the real and ideological worlds of ancient Egyptians. Since Barry J. Kemp’s pioneer work, *Large Middle*

Kingdom granary buildings (and the archaeology of administration) (1986, 120–136), references to granaries have increased and granaries have even become the subject of a certain number of studies. Increasingly more facilities are revealed by ongoing excavations, and are interpreted as silos. However, all the presented studies are narrowly focused and offer no general picture.

This paper deals with circular silos and their distribution pattern within the settlements of Elephantine, Kahun, and Ezbeth Rushdi; a focus chosen for three main reasons. First, these storage structures were used only for grain storage purposes (Pilgrim 1996, 214, 233–234). Second, circular silos are amongst the most numerous storage facilities that have been found. Third, these structures are relatively easy to identify (Bietak *et al.* 1998, 9–49; Czerny 1999, 2010, 69–80; Jacquet 2001; Millet 2007, 681–743; Petrie 1890, 24; Pilgrim 1996). The three above-mentioned sites have been selected as case studies because of the sufficient size of the excavated area, and as the state of their publication enables proper analysis.. The aim of this paper is to answer the three following questions: Can we use the circular silos as a status marker in the same way as the houses? Is it possible to observe any diachronic trends, and if so, what do they say about the socio-political changes? What aspects of local societies can the distribution pattern of silos reveal?

No macro studies of granaries and silos currently exist, as the problems faced when studying these storage structures are the same as those concerning settlements in general. One of the most acute problems is the representativeness of the sample. So far, only a relatively small number of settlements have been excavated and most of them were state-designed. Furthermore, none of these sites have been completely uncovered; with the research often limited to trial pits and trenches, and thereby complicating the interpretation of discovered structures (as at Dendera, Karnak, Mirgissa, Qasr es-Sagha, Tell Basta). In addition, access to the pertinent information is sometimes made difficult by the fact that many excavation reports are either preliminary or do not exist at all (Jeffreys 2006, 164–168). In the case of Middle Kingdom (MK) silos and granaries, the problem is often exacerbated through many reports omitting thorough description.

Method

This study relies on a database that aims to gather all the available archaeological evidence of silos and granaries from the MK. In its present state, the database records about 200 potential storage facilities from the following sites: Nubian fortresses, Elephantine, Karnak, Abydos South and North, Denderah, Kahun, Lisht North, Memphis (Kom Rabi'a), Abu Ghalib, Tell ed-Daba (area F/I and R/I), and Ayn Asil (Adams 2005, 2007; Bagh 2002, 2012; Bietak *et al.* 1998, 9–49; Czerny 1999, 2010, 69–80; Dunham 1967; Dunham and Janssen 1960, 113– 122; Frey and Knudstad 2007, 26–29; Jacquet 2001; Larsen 1936, 1941; Marchand 2012, 273–285; Millet 2007, 681–743; Petrie 1890, 24; Smith 1995; Vercoutter 1970; Pilgrim 1996; Wegner 2001, 290–292). However, these 200 facilities do not represent all the currently-excavated structures. Only those silos whose locations were detectable and whose dimensions can be estimated have been recorded.

There are a number of possible methods when studying silos and granaries. Generally, these can be divided into two very broad areas: the first including topics related to material viewpoint and the second one focusing on themes concerning administration. The present study follows the method employed by Adams in his doctoral dissertation (2005). Adams estimated the volumes of granaries excavated in Abydos North, and distinguished three levels of storage capability and possible social implications (2005, 488–512). Another source for direction were the studies by Tietze (1986, 55–78) and Shaw (1992, 147–166), focusing on Amarna and also the typology of Kahun houses made by Doyen (2010, 81–101). The core argument of all these works relies on the hypothesis that houses, and more precisely their size, architectural features, and equipment, can be used to assess the general socio-economic position of their owners. In his sample, Tietze has proven that the most basic status indicator is the size of houses, which positively correlates with other social markers such as: wall thickness, number of rooms, installation for water jars, size of attached courtyards, and capacity of grain storage silos (1985, 56–58, Abb. 1; 1986, 55–78). Furthermore, he attempted to estimate how many people each household could support (Tietze 1986, 72–76). Similarly, Adams assessed the probable rank of the owners by the size of the base of the house. He also estimated the total capacity of the silo and translated it into ration units (2005, 487–500). He found no positive correlation between the size of the house and its total silo capacity, but he did distinguish three levels of storage capabilities (2005, 500). Shaw focused on the ideal household, but in his article, he presented the frequency of various house sizes together with their implications (1992, 147–166). Whereas Doyen, with her typology of houses in Kahun, offers an instrument to evaluate the finds from that site (2010, 81–101). Finally, a valuable source for comparison is Bussmann's article on Old Kingdom pyramid towns, where he establishes a typology of those settlements that enables us to see a relation between a particular type and its provision (2004).

This article focuses on the frequency of circular silos in the chosen settlements, the types of houses where silos were found and the changes of the distribution pattern over the course of time. However, the total silo capacity does not play an important role. Estimating the volume of the silos is difficult, as their height and the extent to which they were filled are unknown. It is also impossible to ascertain the length of the storage period for each structure, *e.g.* at the provision centre H84 in Elephantine, grain was only stored for a relatively short period of time (Pilgrim 1996, 267).

Circular silos in the broader context of other storage facilities

Ancient Egyptians did not have only one way of constructing silos and granaries. The frequency of each type of storage facility is shown in Figure 15.1, excluding the pits and shafts, which were not built-up structures. Generally, silos and granaries can be divided into two main groups – circular and rectangular – the former being slightly more frequent. In the MK, the diameter of these structures could vary from roughly 1m to 3m and have been found as isolated structures, in pairs, or in groups. Generally, although not always, silos were situated in a room, which was very likely an open courtyard (Bietak *et al.* 1998, 9–49; Czerny 1999, 2010, 69–80; Jacquet 2001; Marchand 2012, 273–285; Millet 2007, 681–743; Petrie 1890, 24; Pilgrim 1996; Wegner 2001, 290–292).

All MK circular silos had some common characteristics, particularly their construction features. The most noticeable is their shape. Circular silos were usually at least partially sunk into the floor, and often their walls were one brick thick, laid on their edge. The floor sometimes included a brick pavement, which might be laid on a plaster layer (Pilgrim 1996), a sand layer, or both (Millet 2007, 681–743). Most of the time, the inside of the silo was plastered (Bietak *et al.* 1998, 9–49; Czerny 1999, 2010, 69–80; Jacquet 2001; Marchand 2012, 273–285; Millet 2007, 681–743; Petrie 1890, 24; Pilgrim 1996; Wegner 2001, 290–292).

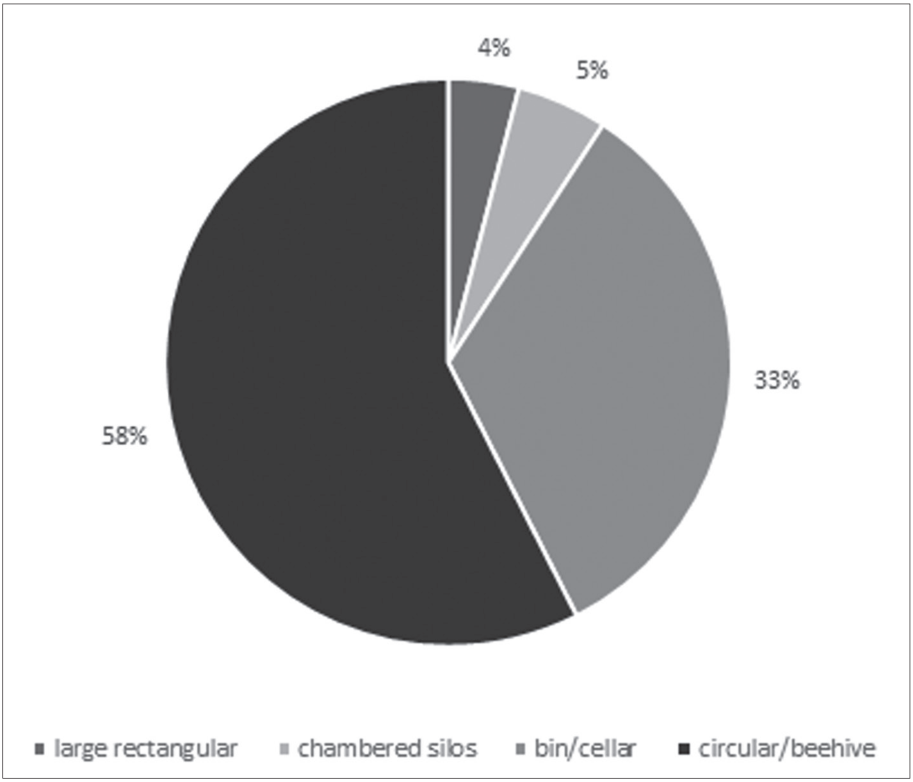

Figure 15.1. Frequency of attested Middle Kingdom built-up storage structures.

Another common characteristic is the location of silos. Although not always possible to prove it, the circular silos were placed in courtyards. Scholars think that their location in an unroofed room was more convenient (references as above). Although the location of circular silos may seem unimportant, it can help to understand the function of the building in which the silo was situated and whether the silo was conceived as an integral part of the edifice at the time it was built or later.

Size is also a key consideration. Analysis of the database shows that the silos with a diameter of 2 m or more seem to have been either part of the industrial area or part of an institution. No case can be ascribed with certainty to a domestic context. Silos with a diameter between 1 m and 2 m demonstrate a much higher degree of variability, occurring in all contexts. However, very small silos of a diameter about 1m are rarely found in industrial areas or in an institutional frame. The precise identification of such small structures is uncertain.

Rectangular structures include the following types of facilities. First, the well-known large rectangular granaries, constituted by a group of interconnected square chambers measuring more than 3m with restricted access, often with a courtyard (Dunham 1967; Dunham and Janssen 1960, 113– 122; Frey and Knudstad 2007, 26–29; Kemp 1986, 121–122; Smith 1995; Vercoutter 1970; Wegner 2001, 290–292). Second, the structures which Adams called chamber silos (2005, 2007, 1–23) that formed of a row of almost-square chambers (most often, three or four), and generally measuring between 1–2 m. This facility was usually situated in an open courtyard, often showing traces of economic activities. Both above-mentioned structures are considered as represented in funerary models (Adams 2002, 2007, 1–23; Arnold, D. 2005, 1–75; Bagh 2002, 29–61; Larsen 1936, 41–87, 1941, 2–29; Watt 2013). Lastly, structures which may be called bins and cellars are included, and they are characterised by smaller dimensions, thinner walls, and bricks often laid on their side. Nevertheless, distinguishing between chamber silos and the last group of objects can sometimes be quite problematic.

Kahun

Kahun was discovered in 1889 by Petrie (1890, 1891), and is the best known settlement site from the MK. It has been the subject of numerous studies focusing on a variety of topics such as everyday life, (Szpakowska 2008), house architecture (Doyen 2010, 81–101), or aiming to revise the excavation (Arnold, F. 2005, 77–704; Frey and Knudstad 2007, 23–65). The specific function of the town led scholars to assume a high degree of dependency on central government institutions (Kemp 2006, 211–221). Kahun had two quarters separated by a wall: the eastern one, which represented the original town, and the smaller and later western quarter. The main problem in Kahun is that, in publication, the silos are mentioned only very briefly, their size generalised (1.7–1.9 m), dating not further addressed, and construction details not presented. Therefore we know practically nothing about which silos co-existed simultaneously; and thereby complicating the interpretation of the distribution pattern (Petrie 1890, 24).

Despite this, Kahun is a good site for exploring the relevance of circular silos as markers of social status. The size of the sample – 220 houses – and the typology of houses realised by Doyen (2010, 83–101) enable us to determine the proportion of silos and to find out whether it is possible to put silos in relation to specific types of houses. From those 220 excavated houses, only 15 were equipped with one, exceptionally two, circular silos. This figure represents roughly 7% of the entire sample. This very low proportion seems to fit the typical picture we have about MK society; only the sufficiently-rich built silos, and the elite were very restricted in number. A close look at the distribution pattern quickly shows the limits of such an assertion.

The following analysis focuses on the western quarter, because it is the best-preserved part of the town and 150 of 220 excavated houses are situated there. In addition, the majority – 13 out of 15 silos – were discovered in this quarter (Petrie 1891, pl. XIV). Doyen divided the houses of Kahun into 23 types, but only 18 of them were present in the western quarter. One, classified as type 3, appeared most frequently (Doyen 2010, 83–101). Besides Doyen's typology, it is possible to apply the division made by Arnold and later by Adams (Arnold 1996, 13). This division is not as precise as Doyen's, but its advantage is the attempt to relate house groups to a particular socio-economic stratum of society. Almost 85% of the buildings from the quarter can be classified as medium-size houses (50–100 m^2) (Doyen 2010, 83–101), which are generally supposed to have been inhabited by a lower stratum of society, namely by simple workers and other persons of similar status (Adams 2005, 465–467). About 15% of the buildings can be classified as large houses (100–300 m^2) (Doyen 2010, 83–101). These could be inhabited by minor officials, priests, or artisans with supervisory responsibilities *etc*., which constituted the middle stratum of society (Adams 2005, 465–467). Only one house in the quarter exceeded the 300 m^2 and could be classified as a very large house, inhabited by someone from the high echelon of the society.

Which of the above were equipped with silos? The majority of circular silos seem to be located in medium-size houses. Three silos were found in the houses belonging to Doyen's type 3, measuring 62 m^2, another three in the houses of type 7, measuring 77 m^2, and one circular silo was situated in a house of type 6, measuring 72 m^2 (Doyen 2010, 83–101). The remaining silos were found in the houses belonging to types 14, 19, and 20, with dimensions between 132–171 m^2 (Doyen 2010, 81–101; Petrie 1891, pl. XIV). The house Wb_1N of the subtype 20b is peculiar, because it was equipped with two circular silos standing next to each other alongside a kind of rectangular construction. According to Petrie's plan, both silos seem to have the same size, but the actualised plan of F. Arnold shows the southern silo to be smaller (2005, Abb. 1). Therefore, 60% of silos were located in the houses inhabited by people who were not considered to have been rich. The remaining 40% of facilities were found in houses that probably belonged to the middle stratum of society, whereas the biggest houses in the quarter seem to not be equipped by circular silos (Doyen 2010, 83–101; Petrie 1891, Pl. XIV).

There are several explanations for this. Some suspect reconstructions might have turned several small houses into one bigger unit (see Table 15.1). Another possibility is that the small houses with silos were not used to accommodate their owners, but might have been used as an economic unit. In addition, the division between categories of houses might have been more blurred in reality, so that even a house smaller than 100 m^2 may have been inhabited by a member of the 'middle class'. Another explanation may be related to the structure of local society, especially regarding the redistributive system. The MK houses used as accommodation for priests on

House	Type	Size of the type (m2)	Possible size after reconstruction (m2)	Location of silo/s
EA c_1N	type 7e	77.1	154.2	original front part
EC a W	type 7a	77.1	154.2	front part
Wh_5S	type 3b	62	62	front part
Wg_2N	type 3b	62	62	rear part
Wg_4N	type 3b	62	124-186	front part
Wf_1N	type 7c	77.1	154.2	front part
Wf_3N	type 7c	77.1	154.2	original front part
Wf_3S	type 7b	77.1	154.2	rear part
Wc_5S	type 6	71.6	143.2	original front part
Wb_1N	type 20 a	170	170	rear part
Wa_3N	type 14	132.3	132.3	original front part
Wa_5N	type 19	167.5	167.5	rear part
Wa_6N	type 19	167.5	167.5	original front part
WiE_N	?	above 100?	above 100?	original front part?
WdE_	?	above 100?	above 100?	original front part?

Table 15.1. Distribution pattern of circular silos found in Kahun.

duty (Arnold and Stadelmann 1977, 15–18; Arnold 1980, 15–21; Robichon and Varille 1939, 82–87) had no silos, although their inhabitants were certainly not poor. There was no need to equip these houses with storage structures, because they were not permanently inhabited, and priests received rations from the temple on daily basis. The presence or absence of a silo does not testify so much about the wealth of its owner, but instead his manner of subsistence and the function of the house. Nevertheless, more data is necessary in order to provide a more precise analysis. The owners of the silos in Kahun may have been minor officials, priests, or some type of supervising artisan. In this sense, the presence of the silo may indicate wealth, but it could also testify that the owner was responsible for a provision of a group of subordinates or clients (Adams 2005, 465–467).

Ezbet Rushdi

In the 1950s, Shehata found the remains of a MK temple ascribed to Senusret III near the village of Ezbet Rushdi (Shehata 1959, 207–226). In 1996, an Austrian expedition decided to re-excavate the site and found the remains of a settlement in the area around and under the temple (Bietak *et al.* 1998, 9–49; Czerny 1998, 41–46, 2010, 69–80). The latter remains represent the rests of a rectangular, apparently pre-planned, settlement, which most likely dates to the reign of Amenemhat II and was of probably domestic and/or industrial character (Czerny 1998, 41–46). Finds of flint implements prompted Tillmann to assume the presence of workshops on the site (Czerny 2010, 69).

The excavated houses consisted of three rooms, although some buildings also had an additional room such as an open yard, in front of them. The space between the houses served as storage (Bietak *et al.* 1998, 9–49; Czerny 2010, 69–80). The house size was more or less constant, 60 m^2 according to Czerny (2010, 75), and according to Forstner-Müller, about 50 m^2 (2010, 106). Furthermore, each house had its share of the land plot, an additional 25 m^2 (Czerny 2010, 75). As in Kahun, some rebuilding occurred in Ezber Rushdi. It is clear that in at least two cases, two or more houses were connected together, increasing the house size to approximately 120 m^2 (Czerny 2010, 75). A geophysical survey conducted in 2004 in the unexcavated temple surroundings resulted in the discovery of a large settlement covering an area of at least 30 ha (Forstner-Müller 2010, 107).

The sample of houses from Ezbet Rushdi is different to that of Kahun: the uniformity of layout seems greater, the number of excavated houses is much smaller, and the buildings are quite damaged. However, unlike Kahun, here we have at our disposal four different strata (e4 to e1), related to distinct occupation phases, which enables us to observe a development of the distribution pattern of silos (see Tables 15.2 and 15.3).

The distribution of circular silos in Ezbet Rushdi is characterised by the great number of silos. In addition, we should not forget the fact that the houses may even be smaller than the smallest houses in Kahun. Therefore, the high number of buildings equipped with one or more circular silos is striking. Another particularity is the location of the majority of storage facilities outside the houses. When we look more closely at the size of the silos, we find the following picture. The majority of the bigger silos, with a diameter of 2 m or more, were located in the northern area of the settlement. Another concentration of large silos was situated in the area of the biggest house units XIII–XIV and were double the size. Interestingly, in phase e3, all the smaller silos had a diameter of 1.3 m, while remaining layers show a greater degree of

House	Location of silo/s	Dimensions of building (m2)	Approximate dimensions of silos in m
e4_III	area N of house	roughly 60	1.5–2
e4_VII	elongated room	roughly 60	1.3; 1.3
e4_VII	transverse room	roughly 60	1.6; 1.6
e4–north area			
e3_III	area N of house	roughly 60	1.3; 1.3
e3_V	transverse room	roughly 60	1.3
e3_VII	area N of house	roughly 60	1.3
e3_XIV	transverse room	roughly 60	1.3
e3_XIV	area N of house	roughly 60	2
e3_XIII	elongated room	roughly 60	2.3
e3_XIII	front area	roughly 60	2.3; unknown
e3_XI	front area	roughly 60	2.3
e3_north area			1.3; 2; 2; 2.3
e2_III	transverse room	roughly 60	1.7
e2_V	transverse room	roughly 60	1.3; 1
e2_V	area N of house	roughly 60	1.7–2; unknown
e2_XI	area N of house	roughly 60	
e2_XIII–XIV	court	roughly 120 (530)	
e2_XVI	area N of house	roughly 60	1
e2_XVI	area N of house	roughly 60	1.7
e2_north area			2; 2; unknown
e1_V	rear part of the area	roughly 60	1.4; 2.3
e1_V	elongated room	roughly 60	1.4
e1_VI	area N of house	roughly 60	unknown
e1_VII	area N of house	roughly 60	could reach about 2 m
e1_VIII	area N of house	roughly 60	2
e1_XV	area N of house	roughly 60	2; 1.7
e1_XIII–XIV	area N of house	roughly 120	2–2.3
e1_north area			2.3; 2; unknown

Table 15.2. Distribution pattern of circular silos found in Ezbet Rushdi I.

Layer	Attested houses	houses equipped with circular silos	Percentage
Ezbet Rushdi e4	6	2	33%
Ezbet Rushdi e3	9	6	66%
Ezbet Rushdi e2	9	5	55%
Ezbet Rushdi e1	8	6	75%

Table 15.3. Distribution pattern of circular silos found in Ezbet Rushdi II.

variability. The most complex distribution pattern is related to phase e1, in which four houses of the six attested seem to have had at least one silo with a diameter of about 2 m (Bietak *et al.* 1998, 9–49; Czerny 2010, 69–80).

Ezbet Rushdi had an industrial character, and therefore, is not a representative sample when considering a typical MK settlement. However, it should not be dismissed. Even though it was a state-planned town like Kahun, the marked differences in the distribution of silos reflect distinct purposes. Yet, Ezbet Rushdi may represent only a very specific quarter of a larger town whose precise purpose remains unknown. However, on the basis of the abundance of storage capacities, it may have been closely related to agricultural activities.

Elephantine

Elephantine was an organically-grown settlement inhabited since the Predynastic Period. When we talk about MK Elephantine, we have in mind all three of Elephantine's many layers. The first of them is layer XIV (respectively 14 in the north town) dated to the first half of the 12th dynasty. The next layer is XIII (respectively 13 in the north town), which dates to the end of the 12th dynasty and the last layer, XII (respectively 12 in the north town) which dates to the 13th dynasty (Pilgrim 1996, 15). The small number of excavated houses and the fact that some of them were uncovered only partially makes interpretation more difficult and influences the conclusions. In layer 14, there were only six uncovered buildings, in the next layer, the number increased to 13, and the youngest layer consisted of 11 houses (Pilgrim 1996). However, thanks to the detailed excavation reports, we have at our disposal some precious details that are missing at Kahun and Ezbet Rushdi.

The distribution pattern of silos for each of the three layers is shown in Table 15.4. As in Kahun, most of the houses equipped with silos were smaller than 100 m^2, and thanks to careful publication, it seems almost conclusive that the two large houses, one measuring about 200 m^2 and the other 330 m^2, were probably not simple houses (Pilgrim 1996). The former, H86, had four storage facilities altogether, with an overall surface of almost 9 m^2, and therefore may have played a special role (Pilgrim 1996, 77–83). The latter, H84, was identified as the institution xtm (a provision centre) (Pilgrim 1996, 231–234, 268–274). H50 was previously a sanctuary, only later used for storage and other activities (Pilgrim 1996, 149–148). House H51 has been only partially excavated, but there appear to be rests of various circular silos, whose diameter was ranging from 1.2 to 1.5 m (Pilgrim 1996, 145–147). The last edifice, H53, was a house with tripartite layout measuring around 80m^2 and equipped with two circular silos, one with a diameter about 1 m and the other slightly larger. Besides the circular silos, it had also one cellar, all three together occupying space of about 4.7 m^2. The house was situated in the block of houses in front of the sanctuary of Heqaib, and just opposite H68, where the highest number of sealing from layer 12 was found (Pilgrim 1996, 256). The picture presented would be biased if the respective layers were not noted, so the two biggest houses are the oldest: H86, dating to the first half of the 12th dynasty; and H84, which occupied the area of H86 in the following layer, whereas the three remaining houses come from the youngest layer.

Contrary to Kahun and Ezbet Rushdi, Elephantine enables us to observe how consideration of other storage facilities can increase the number of houses composing of built-up storage structures. In addition, it shows how variable the other structures were. The question is: to what extent were they used for grain storage and to what extent were they used to store other goods?

House	Layer	Type of facility	Dimensions (m)	Total surface of storage structures (m2)	Type of building	Dimensions of building (m2)
H86	14/XIV	C + B/C	1.5	8	hofhouse	200
H24	14/XIV	P	1 × 0.8	0.16	hofhouse	48
H84	13/XIII	C+B/C	2.3	20	hofhouse	333
H11b	13/XIII	S	0.6 × 0.6	0.4	unknown	unknown
H69	13/XIII	B/C	1.1 × 0.7; 2.2 × 1.4	4.1	hofhouse	130
H70	13/XIII	B/C	0.7 × 1; 1 × 1	1.7	tripartite	90
H14	13/XIII	P	0.9	0.6	tripartite	70
H22	13/XIII	S+B/C	0.7; 1.3 × 2.7	3.9	unknown	55
H10	12/XII	P	0.7	0.4	hofhouse	104.5
H53	12/XII	C + B/C	1; 1.2; 2.8 ×1	4.7	tripartite	80
H50	12/XII	C	1.2	1.13	previous sanctuary	98
H51	12/XII	C	1.4; 1.2	2.63	unknown	75
H9	12/XII	B/C	1.1 × 1.1	1.1	annex	18
H11a	12/XII	B/C	1.3 × 1	1.3	unknown	unknown

C = circular silo; B/C = bin/cellar; S = shaft; P = pit

Table 15.4. Distribution pattern of storage structures silos found in Elephantine.

Their storage capacity might have been, at least in some cases, similar to that of circular silos (Pilgrim 1996), and many of them were also in houses where circular silos were attested. The altered pattern once these other structures are included is shown in Table 15.4.

From the presented data, it seems that Elephantine shows a pattern very similar to Kahun. The presence or absence of a silo was not a simple marker of status for its owner. We can also see some details that are hidden in Kahun. We are able to determine that the biggest house with silos was in fact an institution, and the same could have been true also for the other edifice pertaining to the group of large houses. In addition, we can see that at least one of the three smaller houses, which might be classified as belonging to someone from the lower stratum due to its dimensions, was not a house, but a secondary sanctuary. The exact interpretation of the other houses remains open. If we include the houses with other kinds of built-up storage facilities, very little changes. The frequency of houses with storage structures increases to about 50%, but the size of the houses did not differ. From all the layers, only two houses with bins and cellars exceeded 100 m^2, and only by a few metres. The remaining houses would be classified as dwellings of a lower stratum of society if Arnold's classification is correct. As with Kahun, in Elephantine we can find houses bigger than 100 m^2 and lacking any considerable storage facility, which means that the presence or absence of silos testifies something other than simply the wealth of the owner.

Conclusions

The circular silos are already archaeologically attested dating to before the beginning of the Old Kingdom. If we rely on tomb depictions and granary models of the latter-mentioned era, the form of those structures underwent some minor changes as well as immediate context. On the contrary, the well-known MK rectangular storage structures seem to emerge, at least in the iconography, only at the very end of the Old Kingdom and only in Upper Egypt (Bardonova 2014).

In a broader context, circular silos could be considered as a kind of middle-size storage facility, together with chambered silos and other middle-size rectangular structures, such as bins and cellars. This level is characterised not only by the extreme variability of the forms and dimensions of attested structures, but also by a variable functional frame – they were built by both state institutions and by individuals. Meanwhile the so-called large rectangular granaries seem to always have been a product of state activities (Adams 2005, 2007; Bagh 2002, 2012; Bietak *et al.* 1998, 9–49; Czerny 1999, 2010, 69–80; Dunham 1967; Dunham and Janssen 1960, 113– 122; Frey and Knudstad 2007, 26–29; Jacquet 2001; Larsen 1936, 1941; Marchand 2012, 273–285; Millet 2007; Petrie 1890, 24; Smith 1995; Vercoutter 1970; Pilgrim 1996; Wegner 2001, 290–292). However, in many cases, it is very difficult to make a distinction and assign a particular silo to its correct functional frame, especially when considering that the official's house was also his residence and his office.

The distribution of circular silos within the settlements shows some characteristic features: their size was rather small – the diameter of Kahun circular silos was 1m less than the average diameter of the Amarna circular silos (Kemp 2006, 327); only a relatively small percentage of houses were equipped with one or more circular silos (the only exception was the site of Ezbet Rushdi); the houses with silos had neither a specific location within the settlement nor a specific appearance; and some of the edifices equipped with silos were not living quarters. Inclusion of other midsized storage structures into statistics may double the number of houses with storage capabilities.

Although silos are considered to be a physical manifestation of socio-economic capability, and the house size an indicator of socio-economic status of the inhabitants (Adams 2005, 489–498; Doyen 2010, 99; Shaw 1992), the presented graphs (Tables 15.1, 15.2 and 15.3) clearly show that there is no correlation between the specific house type and the presence of a silo. The same pattern is known also from the sites of Amarna or Abydos North (Adams 2005, 489–498; Shaw 1992, 147–166). However, are not useless when analysing and interpreting local societies; they reflected other aspects besides wealth, such as the dependence of the inhabitants on an institution or function of the building (Medamud or Dahshur; Arnold and Stadelmann 1977, 15–18; Arnold.1980, 15–21; Robichon and Varille 1939, 82–87).

The circular silos from Kahun and Elephantine may have been owned by minor officials, priests, or some kind of supervising artisans. They may either be responsible for a provision of a group of subordinates (Adams 2005, 465–467) or simply accumulated their wealth. Kemp states that the New Kingdom Amarna silos stored the produce of lands owned or managed by officials of various callings (Kemp 2006, 330). Those officials acted as patrons, providing for their clients who inhabited the smaller houses in the vicinity of a patron's villa and offering their patron services or products. The patron-client relationship is considered by some scholars to be characteristic also for the MK social structure (Bussmann 2004; Franke 2006; Seidlmayer 1987, 2007), however usually only the large rectangular granaries in the Kahun villas are interpreted the same way (Bussmann 2004, 36). Another problem is that neither the Kahun nor Elephantine circular silos could supply a considerable number of persons (more than a single household) for a longer time period.

Silos which were built as a secondary feature in planned settlements show that even in communities with an institutional character, a group of inhabitants set aside and constructed additional storage facilities, enabling the accumulation of wealth. This would agree with the opinion that the MK was characterised by quite complex social realities characterised with several levels of social and economic differentiation, broader access to precious and semi-precious materials, and to written commemorative monuments (Richards 2005, 173–180), and that the government paid strict attention only to matters related to government trade, building, finances, and the social and economic groups most closely connected with government concerns (Richards 2005, 178).

Adams, in his study on Abydos North, observed a decrease in storage capacities towards the end of the First Intermediate Period, which he related to socio-economic-political changes (Adams 2005, 510). As can be expected in the MK, the frequency of silos did not decrease towards the end of the period, it seems that it could have even increased (Tables 15.1, 15.2 and 15.3). This could complement Adam's discovery and add another point to the discussion about the higher level of centralisation during periods of state consolidation.

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16

Technological and Scientific Challenges for Digital Conservation of Cultural Heritage in Egypt

The Digital Library for Inscriptions, Calligraphies and Writings (DLIC) Exemplar

Azza Ezzat

Introduction

This paper aims to differentiate between types of cultural heritage, focusing on the dangers that threaten this heritage with destruction. It will also present one of the important recent solutions for the conservation of Egyptian cultural heritage, the digitisation and digital preservation of Egyptian writings and inscriptions, which plays a large role in preserving and documenting monuments in archaeological contexts. As a case study, Bibliotheca Alexandrina Writing and Scripts Center created a digital library database to record ancient inscriptions, *The Digital Library of Inscriptions and Calligraphies* (DLIC). It is presented here as an exemplar of how digital projects can preserve forms of tangible cultural heritage, in this case the writings and inscriptions of Egyptian monuments, and can act as a resource for scholars, researchers, and amateurs in the fields of archaeology, Egyptology, calligraphy, and epigraphy.

Cultural heritage is an expression of living practices developed by a community and passed on from generation to generation (*ICOMOS* 2002), and is expressed as either intangible or tangible cultural heritage (Feather 2006, 1–18). As an essential part of dynamic culture, this heritage produces representations of the value systems, beliefs, and lifestyles of human societies, manifested and influenced through natural environments, built environments (buildings, townscapes), and artefacts (material culture, texts, art and images). Cultural heritage contains visible and tangible traces from antiquity to the recent past (Silverman and Fairchild Ruggles 2007, 34–35).

According to the UNESCO definitions of the terms, tangible heritage includes buildings and historic places, monuments, artefacts, *etc*. which are considered worthy of preservation for the future. (www.unesco.org). Intangible cultural heritage is transmitted from generation to generation, and is constantly recreated by communities and groups, in response to their environment, their interaction with nature, and their history (www.unesco.org).

Yet cultural heritage is at risk all over the world. Armed conflict, natural disasters, pollution, uncontrolled urbanisation, and unchecked tourist development pose major problems to world heritage sites. In Egypt, many sites are increasingly facing these problems, ,requiring the development and adoption of practical and rapid solutions to preserve and secure threatened sites. One of the important and recent solutions is digital preservation (Kresh 2007, 96). By scanning text and images, and converting them into digital files, such as a bitmap (Franks 2013, 272), these materials can be preserved for future reference and research. Digitisation can also be the first step towards conducting advanced research on historical materials, providing the accurate rendering of both static and dynamic digital objects; text, sound, and image files, multimedia documents, websites, and databases. Such a collection of digital resources is known as a digital library (Franks 2013, 280).

Digitalisation and digital libraries

The digital library became one of the flagship initiatives for preserving cultural heritage. Developments in information and communication technology enable far wider access to the material for greater portions of the population. These libraries also provide several new media and new modes of study; organising, retrieving, and communicating information to users. This ability to communicate has facilitated the emergence of new modes of publication, with the digital system accessible and transferable to any point worldwide. The role of the library as a database of published information facilitates quick retrieval, access, and usage by the end users, benefitting human development (Malwad *et al.* 2009, 153). In the context of a digital library, it minimises time and cost as a totally paperless system, acting as an efficient supplementary facility to the traditional library for better retrieval and faster communication. Any individual across the globe can have a direct link to digital projects through computers (Malwad *et al.* 2009, 281). Moreover, it reduces distribution and storage overhead and increases user effectiveness and productivity (Malwad *et al.* 2009, 6). The challenges of long-term preservation of digital information became a fundamental concern, and addressing this helped set out key concepts, requirements, and challenges for the field (Tibbo 2003, 26).

To create a digital library, metadata, database, and interface with the user are all required. Metadata describes how, when, and by whom a particular set of data was collected and how the data is formatted; it is essential for understanding the information stored (Hüner *et al.* 2011, 5). The database is the information presented in a structured format; a collection of distinct pieces of digital material formatted and organised in some specific way for use in analysis (Malwad *et al.* 2009, 5). Large quantities of information can be inputted, stored, retrieved, and managed using this system. The databases are set up so that one set of software provides all users with access to all data (Ullman and Widom 1997, 1). The interface is governed by interaction of the user through a visual image or multi-media presentation (Franks 2013, 292). It describes the system and tools used to store, organise, and retrieve that information. To do this requires understanding of end-user needs, the information itself, a general familiarity with tools, technology, methods, and their correlative base (Malwad *et al.* 2009, 155). There are five main requirements for the web interface: consistency, flexibility, scalability, accessibility, and feasibility (Andrews and Law 2004, 134–135; McDonald 2006, 27).

The strategy for digitising cultural heritage through digital libraries is rooted in two main concepts: preservation and dissemination. It is essential for any cultural heritage to be preserved and protected in the best possible way, enabling future generations to benefit from the material, hence the emphasis on establishing the most effective storage of the material by means of a digital library. For dissemination, digital technology opens up vast opportunities for users to gain simplified and open access to large quantities of information. In this manner, a user can search for a digital representation of archival material, photographs, or publications on the internet without having to visit the specific institution where the original material is held (Schatz and Chen 1996, 22–26).

The main benefit of creating a digital library is to support teaching, learning, research and public information, but the initial requirement was to investigate and report on planning, implementing, operating, and evaluating the library (Andrews and Law 2004, 131). Combining technology and information allows remote access of resources to other libraries; thereby breaking down physical barriers through national and international computer networks (Andrews and Law 2004, 141).

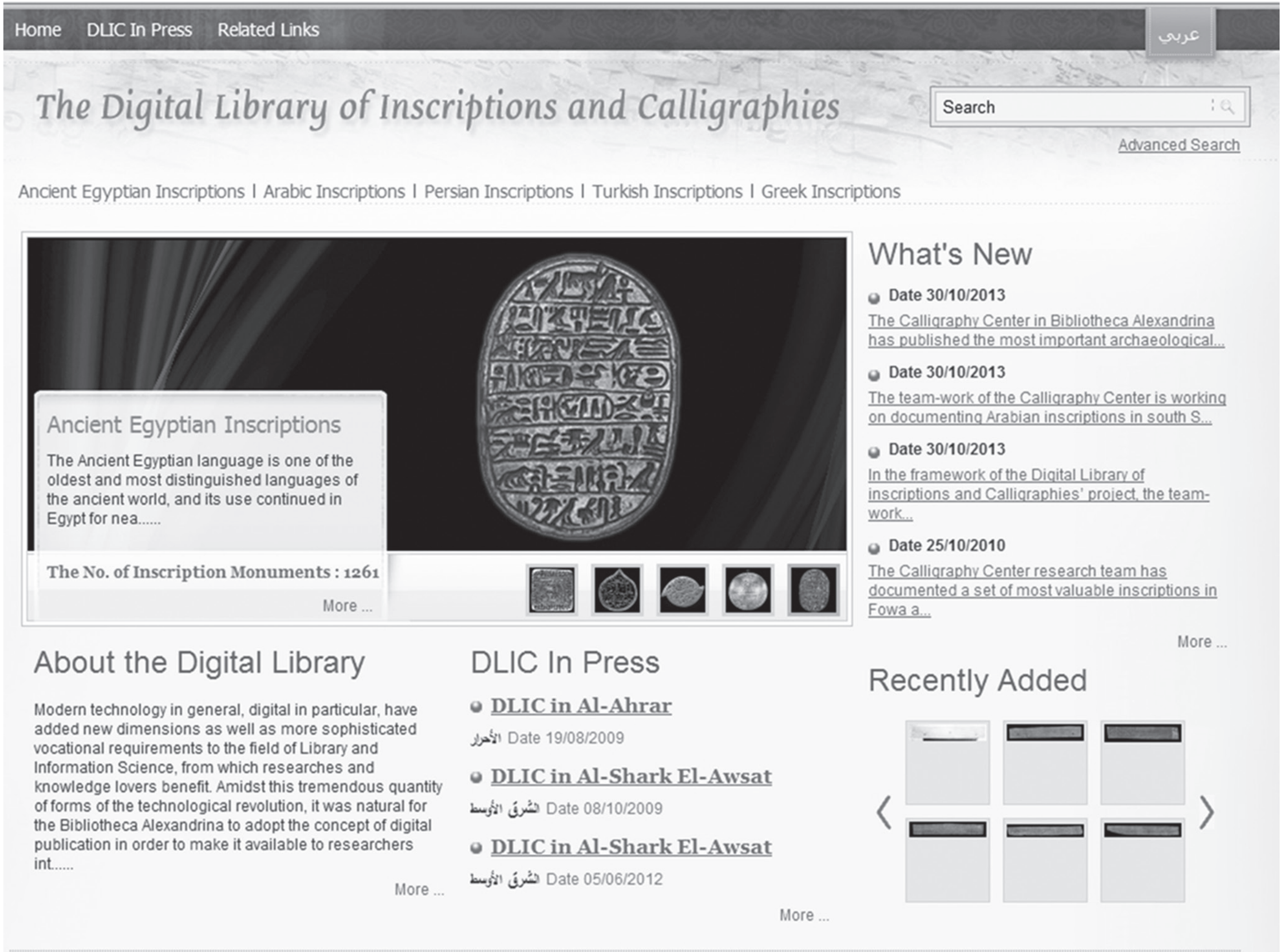
A case study of the creation and implementation of a digital library can be seen in Egypt with the Bibliotheca Alexandrina Writing and Scripts Center's innovative DLIC project (http://inscriptionslibrary.bibalex.org). The creation of this digital library was in response to the current dangers that threaten monuments in Egypt, and the need to record many of the fragile inscriptions on such monuments. For instance, the Islamic Museum in Cairo was severely damaged in a terrorist attack in January 2014 and the majority of the glass mosque lamps were destroyed. Among the damaged objects was the Mishkah (lamp) of Al Ashraf Khalil that dates back to 7th Century AH/13th Century AD, but fortunately the lamp's inscription had been photographed and recorded on the DLIC. This is example clearly demonstrates how digital libraries are exceptional resources in the preservation of fragile cultural heritage.

Methodology of the Digital Library of Inscriptions and Calligraphies (DLIC)

The DLIC project, currently at the forefront of the Centre's objectives, has been tasked with the publication of inscriptions on buildings, monuments, texts, and objects in the different languages and scripts used throughout Egyptian history. This information is freely available online to Egyptologists, researchers, and amateurs in a simplified digital database.

The DLIC website has been developed in collaboration with the International School of Information Science (ISIS) (www.bibalex.org/isis); a research institute affiliated with the Bibliotheca Alexandrina which initiates, promotes, and incubates IT projects and activities related to the development of a universal digital library. There were numerous issues associated with metadata creation and management, the biggest of which was how to handle the entire metadata creation and management process in order to ensure consistency (Andrews and Law 2004, 136).

The aim was to display the database on the website of the DLIC using a simple and easy-to-use design to enable the largest number of researchers to benefit from the ancient inscriptions, and to attain images and references for each inscription (Fig. 16.1). Each inscription in the digital library has its own page, including high-resolution images, a brief description, and translations. Users can browse easily through the inscriptions on the DLIC, as they are categorised according to the original language of the inscription, the classification, and type of the monument. Users can also find the required inscription by implementing an advanced search, which enables them to search using the registration number of the inscription, its current holding location, its original find context, or the historical period to which it belongs. In this way, the researcher can easily and efficiently access everything related to the inscription.


Home
DLIC In Press
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Search
Advanced Search
Ancient Egyptian Inscriptions | Arabic Inscriptions | Persian Inscriptions | Turkish Inscriptions | Greek Inscriptions

The Digital Library of Inscriptions and Calligraphies

Ancient Egyptian Inscriptions

The Ancient Egyptian language is one of the oldest and most distinguished languages of the ancient world, and its use continued in Egypt for nea......

The No. of Inscription Monuments : 1261

More ...

What's New

- Date 30/10/2013
  The Calligraphy Center in Bibliotheca Alexandrina has published the most important archaeological...
- Date 30/10/2013
  The team-work of the Calligraphy Center is working on documenting Arabian inscriptions in south S...
- Date 30/10/2013
  In the framework of the Digital Library of inscriptions and Calligraphies' project, the team-work...
- Date 25/10/2010
  The Calligraphy Center research team has documented a set of most valuable inscriptions in Fowa a...

More ...

About the Digital Library

Modern technology in general, digital in particular, have added new dimensions as well as more sophisticated vocational requirements to the field of Library and Information Science, from which researches and knowledge lovers benefit. Amidst this tremendous quantity of forms of the technological revolution, it was natural for the Bibliotheca Alexandrina to adopt the concept of digital publication in order to make it available to researchers int......

More ...

DLIC In Press

- **DLIC in Al-Ahrar**
  الأحرار Date 19/08/2009
- **DLIC in Al-Shark El-Awsat**
  الشرق الأوسط Date 08/10/2009
- **DLIC in Al-Shark El-Awsat**
  الشرق الأوسط Date 05/06/2012

More ...

Recently Added

Figure 16.1. The DLIC Home Page © DLIC at BibAlex.

Content: The inscriptions and languages

At present, the project has proceeded to record a group of languages in numerous scripts including ancient Egyptian, Arabic, Persian, Turkish, and Greek; developing the inscriptions of each script separately, and recording a new group of other languages' scripts. The basic data and detailed descriptions of these inscriptions are displayed in two languages: Arabic and English. In addition it should be underlined that this is an on-going project, with new content continuously being added. The DLIC launched 1500 inscriptions on 13 August 2011, and less than one year later, this number exceed 6000 inscriptions.

The backend of the website includes five main sections: the main data of each monument that includes the name of the monument, storage location, place of discovery, monument type, type of script, founder, date, references, brief description and comments about the monument, images with captions, and the inscription.

Ancient Egyptian

Many types of artefacts bearing inscriptions in ancient Egyptian with its four scripts (hieroglyphic, hieratic, demotic, and Coptic) have been recorded in this section. Such artefacts include papyri, clay sealings and tablets, funerary paintings, statuary, pots and pans, and particularly the many funerary architectural elements such as false doors, doorways, columns, obelisks, *etc*. Also included are various inscribed monuments, for instance the mastaba of Niankhkhnum and Khnumhotep, the tombs of Tutankhamun (Carter and Wiznitzer 1978), Ay (Davies 1908, 16–24), Meryre (Davies 1906), Ramses I (Piankoff 1957, 189–200), Paheri (Tylor 1894), and others. Further inscriptions were documented on offering tables, obelisks, columns, and stela. In addition, more than 100 smaller artworks and objects were included, such as scarabs of Ramses II and Seti II (Kitchen 1999, 513), and statues with inscriptions, such as the statue of Rahotep and Nofret, sphinxes of Hatshepsut, block statues of Hor, and many others.

The ancient Egyptian database includes more than 1500 inscriptions that have been categorised in the DLIC as accessories (fans, sceptres, game boards), architecture, arts and sculpture, furniture, implements and utensils (musical and cosmetic equipment, vessels, knives, flasks *etc*.), jewellery, religious and cult objects (coffins, masks, niches, shabtis, mummy labels, basins, canopic jars *etc*.) and writing equipment.

Ancient Greek

The digital library exhibits many inscriptions on artefacts recording the development of Greek writing from the 6th century BC until the end of the Byzantine period, with over 400 inscriptions recorded in the DLIC. The importance of recording Greek inscriptions is highlighted by the continuing work being done in Alexandria, and as such many of the famous Greek inscriptions in Alexandria are being documented on the DLIC. These include the inscription on Diocletian's Pillar (Pompey's Pillar), the foundation plaques of the Serapeum temple of Alexandria, the ancient inscription of al-Rass El Soda Temple, the area of the catacomb of Kom al-Shokafa, and the area of Kom al-Dekka. In the meantime, the centre also documented a new unpublished collection of Ptolemaic coins, an important resource for research on the history of the Ptolemaic family in Egypt. (Hellenic Ministry of Culture 2003, 41–42; Hassan 2002, 70; McKenzie 2007, 53; McKenzie *et al.* 2004, 81–82).

Arabic

The digital library has a large corpus of Arabic inscriptions (over 25000 items) and writings on religious, secular, and military standing structures, as well as small portable objects such as coins and stones. The scripts diversified from Kufic with its different forms; simple, blooming and leafy, and geometric, to Thuluth, Naskhi, and Ruquah. More than 800 inscriptions from mosques, sabils, and Madrassah from Fatimid, Mamluk, and Ottoman Cairo have been documented in the DLIC. A particular focus of this section is the digitisation of the inscriptions from the Al-Busiri Mosque, which contains a wealth of Arabic and Turkish inscriptions on the marble friezes. The religious poetry on these friezes is now readily accessible on the DLIC, providing an invaluable resource for Islamic Period scholars.

Persian (Farsi)

Farsi flourished in the arms of the Arabic language after the Islamic conquest of Iran. Many written scripts were derived from Persian, such as Taaliq, Nistaliq, and al-Shaksatu, and these scripts were used to record many memorials and fundamental writings and manuscripts in Egypt. Among the Persian inscriptions (over 200 items) that have been recorded on the DLIC are 50 folios preserved in the Islamic Arts Museum in Malaysia (Barakat 2004, 88), and a small number of coins kept at the British Museum (Poole 1887, 97).

Turkish

Turkish was the official language of the Ottoman state. Turkish scripts include al-Ijaza, al-Taliq, Diwani, al-Jali, and al-Taghra. The digital library contains over 400 Turkish inscriptions from architectural features such as water fountains and mosques, and from a number of smaller portable items like casket covers and signs. The corpus of Turkish inscriptions includes the tombstones preserved in the Musuem of Fine Arts, Alexandria, and the Mausoleum of Mohamed Ali Pasha.

Using the Digital Library

In many cases, researchers visiting an academic site already know what they are looking for and so will head straight for the search box. Since it is likely to be their first point of contact with the website, IT designers must ensure they avoid frustration with inaccurate or poorly ranked results.

To collect the metadata of the inscription, specified main data is required to record each one. Each inscription should provide most of the following for the user; name of the inscription, category, monument type, calligraphy type, number (monument number/registration number), material, storage location, monument’s dimension, scientific publishing, description, comments, photos, and the text with its transliteration and translation.

Searches in the DLIC can be conducted according to the classification of the name of the monument, number, type of script, storage location, type, discovery site, found by, founder, material, historical period, and address. Searches can also be conducted through filtration of data; acting as a controlling interface for both images and data. This can be done by searching for the material, storage location, script type, historical period, or finder. This kind of search helps in providing a data-based method for assessing and reducing the amount of information needed.

What a digital library project promises is the presentation of an effective and accurate search of multimedia objects across multiple repositories on the internet (Schatz and Chen 1996, 22–26). The aim is to make the collections in our archives accessible, searchable, and free-of-charge to all researchers across the entire archive**.**

Conclusions

In summary, cultural heritage conservation not only helps a community protect economically valuable physical assets, but also preserves its practices, history, and environment, as well as a sense of continuity and identity. In Egypt, many sites are facing destruction, and this requires the rapid implementation of sufficient responses and solutions in order to preserve these sites. Digitisation and digital preservation have proven to be an answer to the problem of conserving Egyptian cultural heritage, while simultaneously providing free open access to material across the globe. Since one of the main objectives of Bibliotheca Alexandrina is to be a leading institution of the digital age, it is only appropriate that the DLIC project has been one of its foremost ongoing works, promoting international and intercultural understanding and awareness, expanding culturally diverse content on the internet, providing resources to educators, contributing to scholarly research, and laying a foundation for other digital cultural heritage conservation projects. In this manner the DLIC project is helping to bring the cultural heritage of Egypt into the modern connected global world.

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http://www.bibalex.org/isis

http://www.unesco.org/

17

Precious Deposits: New Interpretations of Infant Jar Burials in Ancient Egypt and Sudan

Loretta Kilroe

Introduction

Infant jar burials are an infrequent, though persistent, feature throughout the Nile Valley from the Neolithic period onwards. Their basic features remain constant through several cultural and religious changes, suggesting they belonged to an area of tradition separate from, and not dependent upon, official state ideology. Such burials have often been used to make inferences about the living society that propagated them; yet the vessel used for the burial is rarely discussed. This paper explores the relationship between the deceased and the vessel in the context of these specialised funerary rites, and ultimately provides a glimpse into the role of ceramics in Egypt and Sudan.

The study looked at 18 different sites across the region, both cemetery and settlement contexts, and examined the particulars of each burial. However, the extent to which each burial was described varied, particularly correlating to the age of the excavation report. The sites and the periods represented are listed below:

Sudan

Neolithic: El-Kadada (Reinold 1985, 2007), Es-Sour (Sadig 2005; 2008; 2010)
Predynastic: Kubannieh South (Junker 1911)
Early Dynastic: Cemetery 148 (Firth 1927)
Middle Kingdom to Third Intermediate Period: Askut fortress (Britton 2009)
New Kingdom: A single burial at Kubban (Firth 1927)
Christian: Sai (Francigny 2009)
Instances were also noted at Kulubnarti, Riqqeh, and Mirgissa (Verlinden 2008)

Egypt

Protodynastic: El-Amrah (Randall-Maciver and Mace 1902), Abydos (Patch 2004)
Old Kingdom/First Intermediate Period: ‘Ayn Asil (Gobeil 2009)
Middle Kingdom/Second Intermediate Period: Elephantine (von Pilgrim 1966)
New Kingdom: Tell el-Da’ba (Verlinden 2008), Kom Firin (Leclant 1951; Choucri 2003)
Third Intermediate Period: Abydos (Patch 2007)
Graeco-Roman: Kom el-Hisn, Kom el-Kharaz (Hamada and Farid 1946a; 1946b)

In total, 56 burials were studied across a range of locations. Burials beneath houses are common, but they also appear in cemeteries and isolated places outside community burial spaces. Although this is a preliminary, rather than exhaustive, study, the evidence suggests not only the strong social identity enjoyed by children, but also a deliberate choice in the use of container – not for economic reasons, but for its connotations of the home.

Discrepancy in grave goods

The burials appear at first glance to be a homogenous group, but closer examination revealed this is far from the case, particularly with grave goods. Instead, there are apparent levels of provision and distinct preferences for particular items in child versus adult burials.

El-Kadada, a Neolithic cemetery and probable settlement site (Reinold 2007), contained the best-recorded jar burial excavations in the research group. 16 infant jar burials were found across two areas known as Cemetery A and Cemetery B, with only three of these unaccompanied by grave goods. KDD 12/7 from Cemetery A was the richest in the group, containing a ceramic vase with dotted decoration, seven *aspatharia rubens* shells, and no less than 96 beads, of ostrich eggshell, amazonite, and agate/carnelian (Reinold 1985, 77). This is remarkable, given the prevalent opinion that infant jar burial was 'an easy disposal method for such individuals when little was invested in them' (Britton 2009, 77) and because 'it was not thought worthwhile to unseal the doors to the funerary chambers for the sake of an infant' (Firth 1927, 49).

The presence of grave goods is highly likely to indicate some form of ritual for the burial, which in itself denotes value. The goods included support this: bead drilling is relatively painstaking and labour intensive, and their materials have been sourced from multiple areas, making them a valued commodity. Additionally, *aspatharia rubens* shells are found at El-Kadada with almost every child burial, and are only rarely buried with adults. The same is found of vessels decorated with dotted decoration; this is unique to the child burials. Adult burials instead showed a unique preference for three vessel types which never appear with infants, Reinold's ER, TE, and TR types, along with lithics (Reinold 2007, 278). There appears a distinct perception for what is considered appropriate to include with a child. Reinold himself theorised that the 'domestic' nature of infant assemblages is a consequence of women being responsible for the interment of infants (Reinold 2007, 279). This seems based on an assumption of gender roles, however; and even if women's activities were restricted to the domestic space, there is no evidence to suggest men were totally disinterested in the burial of their offspring.

Comparison of grave provisions at El-Kadada also raises the possibility of differentiation among infants and children, something rarely considered. Aside from the discrepancies in quantity, there is also evidence of selective inclusion of infant-specific goods. The vessels with dotted decoration, mentioned above, are only found in seven of the 16 burials (Reinold, 2007: 279). Additionally, KDD22/97, the burial of a three-year-old child, is the only infant burial on the site to be accompanied by ostrich eggshell vessels, three in total. Although these appear in infant burials at other sites across Nubia, at El-Kadada they only appear with adult burials, other than in this isolated case (Reinold 2007, 279). It is uncertain whether such cases are due to the status of the infants' families, or another cause for differentiation.

In contrast, the Middle Kingdom infant burials in the settlement at Elephantine contained no grave goods (von Pilgrim 1966). These five burials – two in pots, three in boxes – were located in the walls and floors of small houses. This is not unusual; in fact, most of the infant burials in this study contained no grave provisions – five of the six burials at the Old Kingdom/First Intermediate Period abandoned palace complex of Ayn ‘Asil, the Graeco-Roman settlement at Kom el-Hisn, and six of the seven burials at the Protodynastic cemetery at El-Amrah are other examples. Does this mean that El-Kadada is an anomaly, and it was more usual for infants to be buried quickly, cheaply, and carelessly?

A cheap and easy disposal method?

Given probable high infant mortality rates in ancient cultures, estimated by Kiple (1993) to be as high as 20% in the first year, researchers have often theorised that children were not considered full members of society; partially to protect the parents from getting attached, and partially to save investment into individuals who may not live long enough to contribute to the community. The use of pots for the burial, typically considered ‘an essentially local and cheap category’ (Richards 2005, 70), has equally been seen as an essentially economic choice for lesser members of society, with vessels reused from the domestic space. Yet, the evidence of labour intensive items and objects specific to children, found at El-Kadada but also Es-Sour, Cemetery 110 at Kubban, Abydos, and Kubbanieh South, as well as the occasional differentiated grave at other sites (such as grave 2677 at Ayn ‘Asil which contained two carnelian beads), does not support this theory.

The concept that children are not considered full members of society has been questioned in recent years by anthropologists, with evidence demonstrating that children as young as two years old are able to contribute economically to society (Spencer-Wood 2014). Baxter in particular has stressed how ‘cross culturally, children forage for substance goods, apprentice in crafting workshops, work in factories and on farms, participate in religious and secular rituals and form lasting social networks with their peers’ (Baxter 2005, 11). Additionally, the theory that infants were not considered full ‘people’ does not fit with what we know of Egyptian culture, where other evidence suggests children were highly valued. There is no evidence of exposure of infants, unlike in Greece and Rome where it was common. The very fact that these children were still accorded a formal burial is telling: Filer notes that in Greece, ‘It is possible that many unwanted Greek neonates were not accorded a formal burial and were thrown out in the refuse’ (Filer 1998, 393). This would seem to suggest that their value was not in question, and that there was another reason behind the choice of receptacle and burial location.

Where are all the children?

What is abundantly clear is that, taking into account this high mortality rate, the pot burials we have are not the standard burial form for children, as there are not nearly enough of them. Where, then, are the rest of the children, and why are they buried differently?

Problems of preservation affecting infant bones are issues commonly used to explain this; such as their lower mineral content, their small size making them easily overlooked in older excavations, and the fact that shallow graves are more susceptible to erosion and animal disturbance. Yet further questions need to be asked to adequately explain the paucity of infant remains.

Pot burials tend to be buried separately; nowhere is this clearer than at Askut, where the seven infant jar burials were buried away from the main cemetery. However, studies at Deir el-Medina (Meskell 1996) and Abydos (Patch 2007) suggest that it was in fact quite common for cemeteries to be spatially divided by age. This seemed to be a New Kingdom trait, until the recent discovery of a Neolithic cemetery in the Western Desert by the Combined Prehistoric Expedition Foundation, which was similarly divided (Past Horizons 2014). At Deir el-Medina's eastern escarpment, infants, foetuses, placentas, and various bodily viscera were located at the base of the escarpment, with what seem to be older children to adolescents above, and finally adults at the highest point (Meskell 1996, 39). The overwhelming presence of adult burials within cemeteries may thus indicate that we have simply not yet found the infant sections of many. The discovery of a small cemetery entirely of infant and child graves by Patch at Abydos (Patch 2007), lends support to this argument. Two sondages around this area hit adult burials, making it likely that this is part of a wider burial ground, with spatial distribution based on age.

This isolation appears at other sites; at El-Kadada, all infant burials are found in the settlement area at the top of the plateau, and 'their distribution is very sparse and cannot be attributed to a cemetery; the conclusion is that these children were buried inside or on the border of the houses' (Sadig 2014, 2). At other sites where infants are found in a specified cemetery space, they are not all buried in pots, but in coffins, the ground, or occasionally, as at the Third Intermediate Abydos site, in a single jar burial found in the cemetery. As such, it seems even more likely that the pot burials are used in specific cases, relating to particular children. The main theories as to what exactly the pot use could represent are presented below, although each is found to be seriously lacking.

Pot burials as foundation deposits

It was Petrie who first suggested that the burial of infants below structures meant they were acting as a foundation deposit (Petrie 1890). This idea has been elaborated upon in recent years by Orrelle (2008), who, though focusing on the Levant, has also discussed the meaning behind Egyptian burials. Orrelle (2008, 74) theorised that the presence of infants in certain 'structure-related locations' in later Levantine historical contexts carried implications of sacrifice, with the infants acting as foundation deposits or offerings. Additionally, she suggests that the discovery of single infant bones, or partial skeletons, in jars, is indicative of pre- or post-mortem mutilation, and that male selection, if found in these contexts, would be further evidence of a sacrificial, ritualised death. Although Petrie focused more on their use as foundation deposits, which might not necessarily include deliberate sacrifice, Orrelle (2008, 74) links the infant burials with human sacrifice – part of fertility rites common in many cultures – to ensure crop growth or adequate rainfall. The necessity of killing certain infants reflected a need to rebalance the perceived fragile world order, as particular infants were seen as introductions of chaos. Boeyens *et al.* (2009, 230), in their study of a nineteenth century infant jar burial in southern Africa, observe that several Bantu groups consider some infants 'abnormal and ritually dangerous'; among the Venda, these included twins, breech births, and infants who cut their upper teeth before their lower teeth, as well as those with physical deformities.

Can this be applied to the ancient Nile valley? There are several basic problems with the idea, aside from the obvious issue of interpreting one cultural phenomenon as having the same motivation across removed cultures. One is that, in the sites researched here, many of the jar burials were found under small domestic dwellings, as at El-Kadada and Elephantine. These are not the type of locale typically perceived as requiring foundation deposits. The six burials at Ayn ʻAsil, two of which were in jars, were associated with a palace complex (Gobeil 2009); but were interred after its abandonment, rather than before its construction. In fact, none of the burials studied here were associated with a level that could correlate to a foundation deposit, making this theory unlikely.

Regarding the presence of partial skeletons, understanding these only as evidence of mutilation and sacrifice is a flawed interpretation. Post-mortem dismemberment was common in the Near East, particularly in the Neolithic period, and reflects a ritualisation of death rather than a ritual death. As it stands, there is nothing in any of the infant burials studied here to suggest sacrifice. Additionally, there is no evidence of stigma attached to particular infants in the Egyptian and Nubian cultures.

Pot burials as wombs

It is a simple step to think that placing infants in pots is protective; but many scholars have gone further, theorising that the vessel used represents a womb, from which the infant may be reborn, or the mother may become pregnant again.

This idea has typically been developed from African ethnographic examples. The cultures used as supporting evidence have a variety of approaches to the burials and the ideology behind them. Among the Lenge, infants were buried in inverted pots, which were perforated. These pots represented the womb, which ensured that the woman would become pregnant again (Boeyens *et al.* 2009, 224; from Ohinata and Steyn 2001). When a woman miscarried among the Kgaga during the first three months of her pregnancy, the infant was buried in a pot and placed in a riverbed; and between four and nine months, in a pot in the shade of the house. This was because the death of an infant disrupted the natural social order, causing pollution and chaos, which was envisaged as heat. In order to prevent drought from this released heat, the infant had to be kept cool (Boeyens *et al.* 2009, 226; from Hammond-Tooke 1981, 114). The Sudanese population today views pots as metaphors for the ideal womb; protective and watertight, which would not result in a stillbirth (Sadig 2014, 3); whereas in Zimbabwe, the pot was not intended to represent idealised protection, but rather a womb that has not yet given birth. This metaphorical womb was then placed into a dry riverbed, and the body was washed out of the pot during heavy rain, symbolising birth (Orelle 2008, 73).

These are just a few detailed examples of the ethnographies typically relied upon by those who support the womb metaphor idea and apply it to archaeological contexts. While Orrelle and Boeyens look at worldwide infant jar burials, Sadig's work is especially pertinent for this study as he uses such ethnographies to interpret burials in ancient Sudan, particularly at Es-Sour. He has theorised that placing an infant in a womb-like pot symbolised they were still in a child-like stage of life (Sadig 2014, 2); perhaps, as Reinold suggests, prior to some sort of initiation into wider society or the next age group. At El-Kadada, this age of initiation would then be approximately five/six years old, the age of the oldest infant jar burial.

As intriguing as it is, there are still considerable problems associated with this idea, particularly its reliance upon ethnographic evidence. Boeyens *et al.* themselves warn that use of ethnography to interpret archaeological remains is flawed except: …in cases where a direct historical link can be demonstrated between prehistorically and historically known cultures and the time gap is small, [where] ethnography provides invaluable clues for cultural interpretation and reconstruction (Boeyens *et al.* 2009, 224).

The archaeological examples in Egypt and Sudan do not fit these criteria. It is important to note that, while many of the ethnographic examples do stem from African cultures, almost all are from Bantu cultures, which expanded from west Africa *c.*1000 BC. Egypt and northern Sudan did not develop as part of this culture. While Bantu cultural elements may have spread among their Nilotic neighbours, this cannot simply be presumed.

There are other cultural elements which differentiate the traditions of Bantu and Nilotic cultures, which casts doubt on the possibility this womb concept was cross-cultural. Pottery among southern Bantu speakers is a female craft, and thus vessels are naturally closely associated with women, the womb, and fertility (Boeyens *et al.* 2009, 225). The home is additionally considered symbolic of a married woman's body (Boeyens *et al.* 2009, 226), clarifying the reasoning behind placing pot burials in houses/house shade. This can be critiqued definitively for the Egyptian jar burials at least, where the substantial textual and artistic evidence indicates that pottery was overwhelmingly a male craft. The situation is not so clear-cut in Nubia.

It is often additionally suggested that the pots themselves resemble a womb shape. Orrelle's study of 22 burials in the Levant tested the theory that wide-mouthed vessels were associated with neonates/very young children, and narrow openings were often chosen for older children, reflecting the opening and then closing of the human cervix during and after birth. Her study showed that a correlation between vessel mouth size and infant age applied in 16 out of the 22 cases, or in 73%. However, my own analysis of the vessels at El-Kadada showed this does not apply there; there is little difference between the neonate vessel sizes and that belonging to the five year old child, in size or shape. It seems to me unlikely that the statistics from the Levant would apply in the contexts studied here.

Sadig is the only one to mention the fact that there is modern pot burial in Sudan itself, referencing a colleague, Ahmed Hussein of the Department of Archaeology, University of Khartoum, who stated that 'infant-pot burials are made today in Megauda village near Old Dongola, where new-born dead infants are placed inside qadus and buried near the family houses' (Sadig 2014, 6). Further documentation of this phenomenon would perhaps be more relevant to interpretations of ancient Nubian instances, although it should be emphasised that there is no mention whether pot burials at Megauda are equated with wombs in this statement.

The final break-down of the supporting cultural ideas necessary for this sort of womb analogy is that almost all of the cultures used by Orrelle, Boeyens, Britton, and others who associate jar burials with wombs also attempt to prevent drought by killing infants thought to threaten social order. This includes one or both of a pair of twins, breech babies, infants with perceived disabilities, and babies whose upper teeth come out before their lower teeth. This does not fit with what we know of Egyptian culture. As discussed above, children appear to have been highly valued. Additionally, twins appear to be considered sacred in the Late Period at least in Egypt (Baines 1985), and disabled children cared for; a boy found in tomb 1373 at Deir el-Medina with scoliosis is one such example from the archaeological record (Meskell 1996, 42). Whether we can extend this to Nubia pre-New Kingdom is, however, uncertain.

It seems evident that a womb-pot analogy is part of a 'cultural package', where women are potters, vessels, and houses associated with the female body, and child sacrifice sometimes necessary in places suffering from chronic, frequent droughts. It is a mistake to take the womb analogy in isolation and apply it to cultures where these other features, which are interwoven with the concept, are absent.

If both of these theories are demonstrated to be interesting yet over-interpretative dead-ends, where does this leave us? I believe the best method in understanding these burials, is to begin looking at the actual vessels used. This is an approach lacking in major studies, which look at infant jar burials as a strange burial type – never a strange pot use. The pots are themselves a mine of information, and exploring the possibilities of this route was one major aim of my research. What became increasingly clear however, was that, just as Egyptian and Nubian pottery technologies had to be considered as separate cultural trends, even in the New Kingdom, so too did pot burials.

Nubian ceramics

It is evident that Nubian ceramics had an aesthetic as well as functional value; many were seemingly preserved as heirlooms. Kerma beakers, with their distinct preference for an undulating silver band, and tall, regular shape, seem often to have been passed down through generations. Their manufacture would have been a skilful craft and part of the elite cultural sphere. Another feature common to Nubian pottery is their imitation of basketry; although sometimes this is related to techniques of manufacture (Rose 2010, 18). While it must be remembered that Lower and Upper Nubia were not single cultural entities but rather shifting kingdoms and cultural groups, this value placed on ceramics seems common to most. Any understanding of jar burials thus needs to be placed into this context.

Most of the pot burials in this study from Nubia are hole-mouthed, resembling cooking pots; yet even though Reinold states there is some evidence of carbonisation on the pots found at El-Kadada (Reinold 2007, 277), they are in remarkably good condition for a vessel type usually characterised by its rough manufacture. The example from Es-Sour (Sadig 2014, 15) is another that looks like a cooking pot, yet does not seem to be made out of the usual rough, tempered fabric. The practicalities of larger pots in particular is something to bear in mind when we are assessing function; larger vessels tend to be pointed, and either used for holding water (if porous) or are buried in the floor for storage. The difficulty of extracting these vessels for secondary usage, while not impossible, must be a consideration.

Many of the vessels studied also exhibited signs of decoration. We have already discussed the infant-specific dotted decoration found on vessels at El-Kadada; in addition, two vessels at Es-Sour were decorated in a rocker stamp technique (Sadig 2005, 3). The infant burial in grave 23 at Kubban was covered in raised impressions (Firth 1927), and the bowl burial in Cemetery 148 had incisions that were then filled with white paste (Firth 1927). The continuation of specific types of decoration over a long period of time (across all vessels, not just jar burials) is akin to the continued prevalence of hand-made vessels, long after the potters wheel was introduced, and seems to be part of a Nubian sense of identity.

Additionally, there is also evidence at El-Kadada of vessel repair, *e.g.* the vessel used in KDD 12/7/1 (Reinold 2007, 243). Careful holes have been bored into segments and were presumably used to tie broken pots back together. Bothering to repair vessels rather than throwing them away is further evidence that these ceramics at least held a high value to someone, whether economic, or emotional. Their subsequent removal from the living sphere is thus cast into a new light.

Francigny's examples at Sai – Christian infant jar burials placed in sandy Meroitic grave fills – are notable exceptions to these generalisations, probably due to their much later date. Some of these jar burials are amphorae, imported from Egypt for wine or some other substance, before ultimately being reused for burial (although some are also cooking pots). Often, the idea of vessels being recycled from their primary use in the domestic sphere is taken to mean this was 'an essentially local and cheap category' (Richards 2005, 70), as mentioned above. However, a contradictory interpretation of vessel reuse crops up when we look at Mycenaean, Cypriot, and other imported wares in New Kingdom Egypt such as pilgrim flasks and stirrup jars. These are overwhelmingly found in tomb contexts after their primary use as a container was obsolete; yet they are still seen as markers of elite culture. There is every possibility that these amphorae were considered in a similar light.

Unlike many of the other burials, these contain absolutely no grave goods; unsurprising, given the Christian condemnation of the practice. However, in the mud used to seal the tops of the vessels at Sai, there was frequently inscribed a pentagram, a Christian symbol of protection in Nubia at this time, showing that these infants were still interred with care and probably a sense of ritual. What is particularly interesting about these burials, however, is the fact that, even when following Christian doctrine regarding grave goods and iconography, there was still no perceived problem with placing Christian infants in a pagan space.

Egyptian ceramics

There is more variety among the pot burials studied in Egypt. Pottery from the Egyptian cultural sphere was considered less elite than the preferred fabrics of stone, metal, faience, and, later, glass. It was perhaps more valued for its imitative qualities, something suggested by the appearance of miniature, symbolic offering vessels as well as those painted to look like stone and faience. Again, this approach to ceramics is something we need to bear in mind when trying to understand the reasoning behind the burial form.

The vessels used in Egyptian burials are briefly outlined here: at Elephantine, the vessels used are coarse bowls. At Kom Firin, Kom-el Hisn, and Kom el-Kharaz, tall jars are preferred. The Third Intermediate burial at Abydos is in a narrow-necked jar (Patch 2007). At all of these sites, jar burial is not ubiquitous for infants but interspersed with other forms. These forms turn up as pottery coffins at El-Amrah (Randall-Maciver and Mace 1902), with infants just as likely to be buried in boxes at Lahun and Elephantine, and, at Ayn 'Asil, just placed in the ground (Gobeil 2009). The burials at the Middle Kingdom fortress of Askut, included as Egyptian because of the typically Egyptian cultural features displayed at such sites, appear to have been interred in large, wheel-made pots, with rounded bottoms and possibly deliberately broken tops. It is difficult to infer more based on the photographs; unfortunately Britton includes no description of the vessels (Britton 2009).

The Egyptian vessels are very rarely decorated; the more decorative forms of Egyptian ceramics, such as blue-painted ware, do not, based on the data set, appear to have been used for infant burial.

Vessels as part of the home?

The very different approaches taken by these two cultures/groups of cultures can be seen clearly across the infant jar burials, and it is likely that the details of pot burial in different areas and times are reflective of community social identity. Additional analysis of pot burials found in future excavations would hopefully shed light on these. That different cultural groups made up Nubia has been appreciated for some time; but the significant differences in infant burial types across Egypt, both in time and space, indicates that funerary practices of less visible members of society were perhaps significantly localised. Attempting to understand all infant jar burials, from El-Kadada to the Christian period, as a continuous feature is inherently problematic. Unfortunately, this is too often the manner in which they are studied.

However, there is no denying that the burial choice crops up somewhat frequently. This commonality may mean that vessels themselves, whether for display, cooking, or storage, had a link to the domestic, family space – and thus, so did certain individuals. This domestic space is, by the very presence of the burials, ritualised to some extent, challenging the domestic/public dichotomy so discussed in archaeology. The common presence of these burials under domestic structures may relate to the concentration of a child's identity within the domestic space – but not a lack of identity altogether. Jar burials in other spaces – such as the isolated group outside the main cemetery at Askut, or those in the abandoned palace complex at Ayn 'Asil, may be reflective of community preferences, related to the social identity developing in groups across the country.

Why these infants?

The discrepancy between quantity of pot burials and expected infant mortality levels is still problematic. Research throughout the project indicated that while pot burial phenomena were related to the identity of infants being concentrated in the home, a variety of reasons relative to the period of the site and individual community practices led to different patterns appearing across sites. To assess how well we can currently understand these motivating factors, I concluded by comparing two of the best-documented sites, El-Kadada and Askut; which clearly demonstrated the necessity for viewing each site in its own context.

At the Neolithic site of El-Kadada, the excavator interpreted the shallow archaeological remains surrounding the infant burials as an indication that the settlement was originally located there. The patterns of infant burials correlated thus to buildings, probably houses. Reinold notes that the entire site is badly eroded at the sides (Reinold 2007, 280), which has led to the loss not only of much of the settlement area, but also probably many adult burials. As such it is likely that the 16 infant burials were originally part of a much larger group, depleted by erosion. The presence of similar infant jar burials at roughly contemporary Es-Sour, makes it likely that these two sites shared broad cultural identities; however the current lack of any settlement evidence at Es-Sour means we are as yet unable to fully understand the relationship between the two sites. It has also recently come to my attention that three pot burials were also found at Gala'at Shanan, two in large pots, and one with grave provisions of a pottery vessel and beads (Nasr 2012, 11). This site is seven kilometres south of El-Kadada, and at first glance seems likely to be part of the same culture. However, as it was not studied in depth as part of the project, further analysis of this will have to wait.

The site at Askut looks very different. Both the town and cemetery are located within the walls of the Middle Kingdom fortress. The seven infants buried in pots were placed in an abandoned part of the fortress, away from the main cemetery. It does not appear there was a spatial distribution based on age here, but rather a different reason for isolating select members of the community. It has been suggested that infants who exhibited disabilities were buried in isolation; however, Britton's study demonstrated that only three out of the seven showed some sign of deformity; a deformed sphenoid in Individual 765, vertebral lesions in one of the individuals in Box 152, and evidence of a cranial infectious bone reaction in Individual 2186 (Britton, 2009, 77). While Britton notes that for Individual 765 ‘this individual’s appearance may have been affected by such a malformation’ (Britton 2009, 77), it is uncertain whether the other two would have exhibited any signs of debilitation. It is equally uncertain whether the four individuals who do not display pathologies had disabilities that cannot be identified in the skeletal record, such as hare-lips, or perhaps were stillbirths. As such, we simply do not have enough evidence to theorise that infant isolation at Askut was due to perceived deformities.

However, three more infant burials were found positioned in the southeast corner of the fortress. These infants were not placed in pots but rather wrapped in shrouds (Britton 2009, 80). It is clear that there was an important distinction placed between these two groups, perceived by members of the community, and reflected in selective burial. Whereas at El-Kadada, it seems that all infants were, as far as we can tell, buried in pots under houses, at Askut there appear to be appropriate ways to bury certain infants. This sort of selective burial points to a particular status ascribed to an infant; whether this is related to the type of death, the grief felt by the family, or even their place in a complex social hierarchy is as yet unknown, and hopefully further research will shed some light on this.

Conclusions

Although this is as yet only a preliminary study, what has become clear is that jar burials have different motivations across various sites and that analysing them as part of their own socio-economic context is more useful than assuming them to be part of a continuous worldwide stream. By looking at jar burials through the angle of a cheap and easy disposal method, a complex situation is over-simplified and studies miss out what the ritual and the vessel itself can tell us about society, particularly those members underrepresented in the archaeological record.

Jar burials are particularly important for providing a window into how communities interacted with the materials at their disposal and incorporated them into a symbolic vocabulary. The different relationships with clay and ceramics between Nubia and Egypt is one particularly obvious example, but the cultural differences even at this level between communities in both areas are also becoming clear. Further research will hopefully incorporate more jar burials from modern excavations to provide more details about the vessels themselves and their position in the wider landscape, something which is unfortunately lacking in many of the old excavation reports, leaving us to work from vague descriptions and photographs. In addition, a more detailed study of vessel shapes and mouth sizes would be especially intriguing.

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18

Illustration or Reality: How Should Depictions of Gardens in Ancient Egyptian Tomb Paintings be Perceived?

Marlene Kristensen

Introduction

In ancient Egypt, gardens functioned, with their symmetrical and formal structures, as expressions of an ideal and ordered nature (Badawy 1966, 235–237; Badawy 1968, 491–494; Wildung 1977, 377). Research on Egyptian gardens has covered a variety of areas, such as produce and botany, linguistic aspects, as well as the archaeological remains of gardens (Bellinger 2008, 73–167; Boulous and Fahmy 2007, 507–511; Harer 1985, 49–54; Manniche 1989; Abd er-Razig 1979, 227–247; Erman and Grapow 1971, 107–108; Fischer 1968, 154–155; Helck 1977, 378–80; Kees 1961, 76–86; Wildung 1977, 376–78). This paper builds upon, in particular, the extensive research carried out by Alix Wilkinson (1998), who examined the gardens' botany, design, architecture, and function. However, whether the tomb paintings of gardens were meant to express reality remains to be further examined (Bellinger 2008, 15). This paper thereby strives to contribute to this research by conducting a comparative analysis of the illustrations, archaeological evidence, and botanical evidence to determine whether these depictions of gardens were intended as accurate representations of reality or merely as idealised illustrations.

Gardens in tomb paintings and texts

The first reference to the word garden, *kꜣnw,* dates as early as the Old Kingdom, and appears alongside the term *kꜣny*, 'gardener' (Erman and Grapow 1971, 107–108). These early attestations provide detailed descriptions of gardens, such as:

> 'It was surrounded with gardens (*kꜣnw*) and arbour-areas (lit. 'places of chamber of trees'), filled with fruit and flowers for the two serpent goddesses. I built their [châteaux] having [windows]; I dug a lake before them, supplied with lotus flowers'. (Erichsen 1933, 5).

From this description we can define a few characteristics of *kꜣnw* gardens. Firstly, they appear to have had water features such as ponds or been in the proximity of bodies of water. Secondly, they contained not only planting beds but also arbours, a fact supported by the iconographic evidence from tomb paintings illustrating papyruses, plant-beds, and a variety of trees and plants.

The hieroglyphic writing of *kꜣnw* is seen written alongside garden scenes such as the one illustrated in Niankhkhnum and Khnumhotep's tomb at Saqqara (Fig. 18.1) (Moussa and Altenmüller 1977, Abb. 8). The depiction in this tomb show workers situated in a garden with a central pool. On the left side of the scene, a worker is seen harvesting crops, such as lettuce and onions, while another worker, carrying a yoke over his shoulders, is seen watering the garden plants. Above the workers is written *ntf hzp ḥr š n pr-dt in kꜣnw*, 'Watering the plant-beds on the plots of the funerary estate by the gardener' (Strudwick 1987, 116). The central pool is also surrounded by lotus flowers, papyrus, and a number of birds. The rest of the scene has been slightly damaged, but it is still possible to see another worker in the garden with the writing *bꜥh in kꜣnw*, 'hacking by the gardener', above him, while another worker is seen kneeling on the ground harvesting crops. Finally, at the end of the scene, two workers are depicted with inscriptions *ntf kꜣnw,* 'watering the garden'*,* above them.

In addition to this scene, there exists another written example of '*kꜣnw*' from an Old Kingdom tomb (Fig. 18.2). The origin of the scene is inconclusive, but Strudwick (1987, 115) determined that it originated from a tomb in Saqqara around the 6th dynasty. In the lowest register, the only one still preserved, there is a depiction of three workers carrying a harvest. Between the last two workers is the word *kꜣnw* and behind the third worker the inscription, *sẖpt irp*, 'carrying

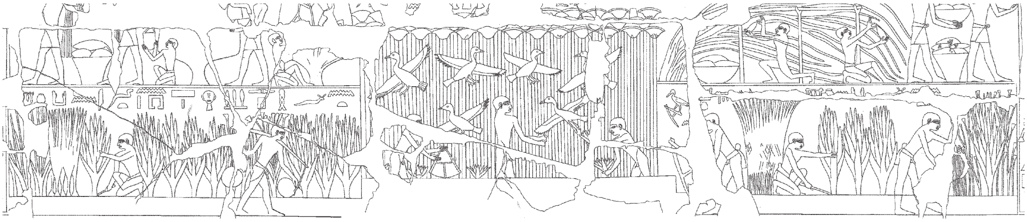

Figure 18.1. Tomb painting from Niankhkhnum and Khnumhotep's tomb (© Deutsches Archäologisches Institut Kairo).

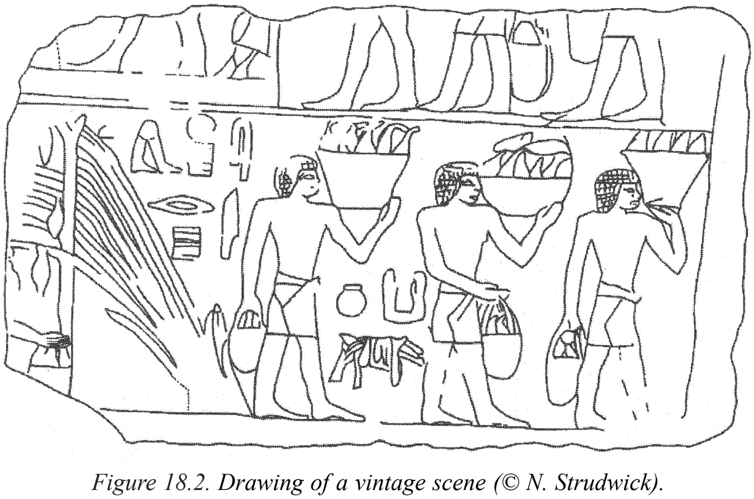

Figure 18.2. Drawing of a vintage scene (© N. Strudwick).

wine'. After the inscription there is a damaged depiction of vines and a hand plucking grapes. Based on the previous definition of a garden in this article, this relief cannot be included as a representation of a *kꜣnw* garden scene, despite the appearance of the hieroglyphs for 'gardener'. This is because the relief only depicts vine and grapes and no other garden elements. Since this relief is only a fraction of a scene it could be argued to have contained more elements, thereby perhaps being a *kꜣnw* garden. However, until more of the scene is discovered or the context identified, this remains speculation.

This conclusion may not exclude vines as an element in gardens. An example hereof can be found from the Middle Kingdom at Beni Hasan (Fig. 18.3). In this scene, workers are illustrated plucking grapes and fruits, while others are planting and watering crops in plant-beds. Above the scene, there are the writings *kꜣny nfrḥtp*, 'gardener Neferhotep', and on the right side, *kꜣny nṯrnḫt*, 'gardener Neternecht' (Newberry 1893, 47). Newberry (1893, 68) chose to interpret this scene as three different scenes consisting of an 'orchard, vineyard, and garden scene'. Such an identification of this scene as three separate gardens, rather than a single garden, is difficult to conclude. However, Strudwick (1987, 117) argues '(…) that vines were only one of a number of products grown on land', highlighting the possibility that this scene does, in fact, depict a single garden.

These examples mentioned are the only depictions from the Old and Middle Kingdom where we find the writings of *kꜣnw* in connection to the illustration of a possible garden, although we have additional garden scenes that are not accompanied by this term. Despite this, we find further writings of *kꜣnw* in the New Kingdom, primarily in private tombs alongside depictions of gardens or the tomb owner in the garden. These earlier examples therefore seem to be part of a thematic development of *kꜣnw* garden scenes into the New Kingdom, and were not merely depictions of the bounty of garden produce.

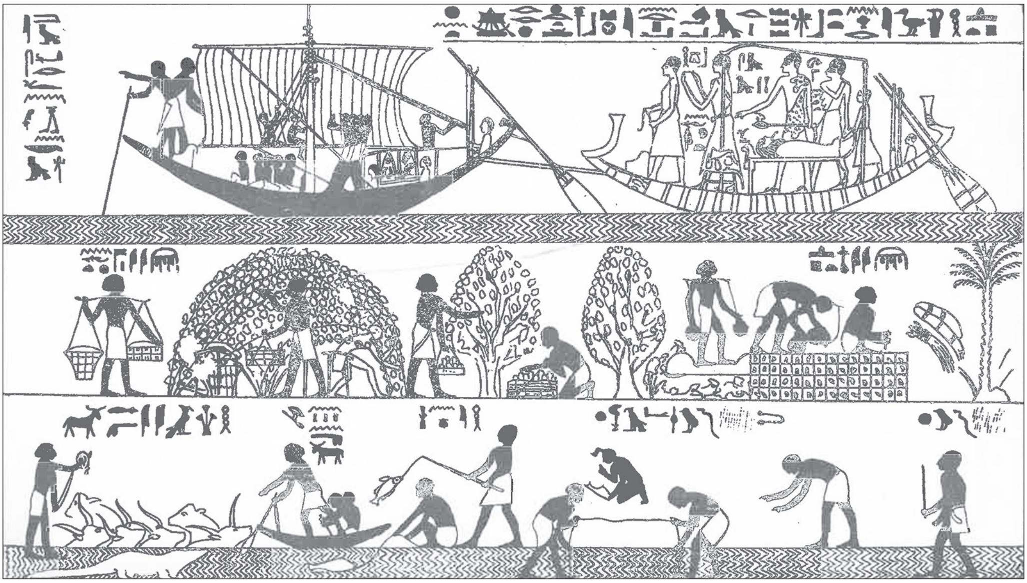

Figure 18.3. Scene from tomb number three at Beni Hasan (After Newberry, Percy E. (1893) Beni Hasan Part I, plate xxix).

These New Kingdom illustrations of gardens follow similar themes from the earlier examples, depicting the same features outlined in the definition above. A prime example can be found in the beautiful garden scenes in the 18th dynasty tomb of Nebamun (Fig. 18.4). Here, the garden scene depicts a rectangular central pool located surrounded by different species of trees. A goddess sitting in a sycamore tree is seen in the top right corner, highlighting divine elements within the garden associated with particular deities (Germer 1980, 85–87; Wallert 1962, 97–113). Another important garden illustration can be found in the late 18th dynasty tomb of Meryra at Tell el-Amarna (Davies 1905, pl. xxxvi). In a scene illustrating Meryra's return home, a T-shaped pool is depicted situated in the foreground of his property. The visitors who came to meet him would, therefore, be unable to ignore the garden and its splendour. Around this T-shaped pool are planted what appear to be sycamore trees. In the row behind, these same trees are depicted in alternation with palm trees. Meryra's garden does not consist of the exact same elements as Nebamun's; of particular note is the reference made to religious elements associated with

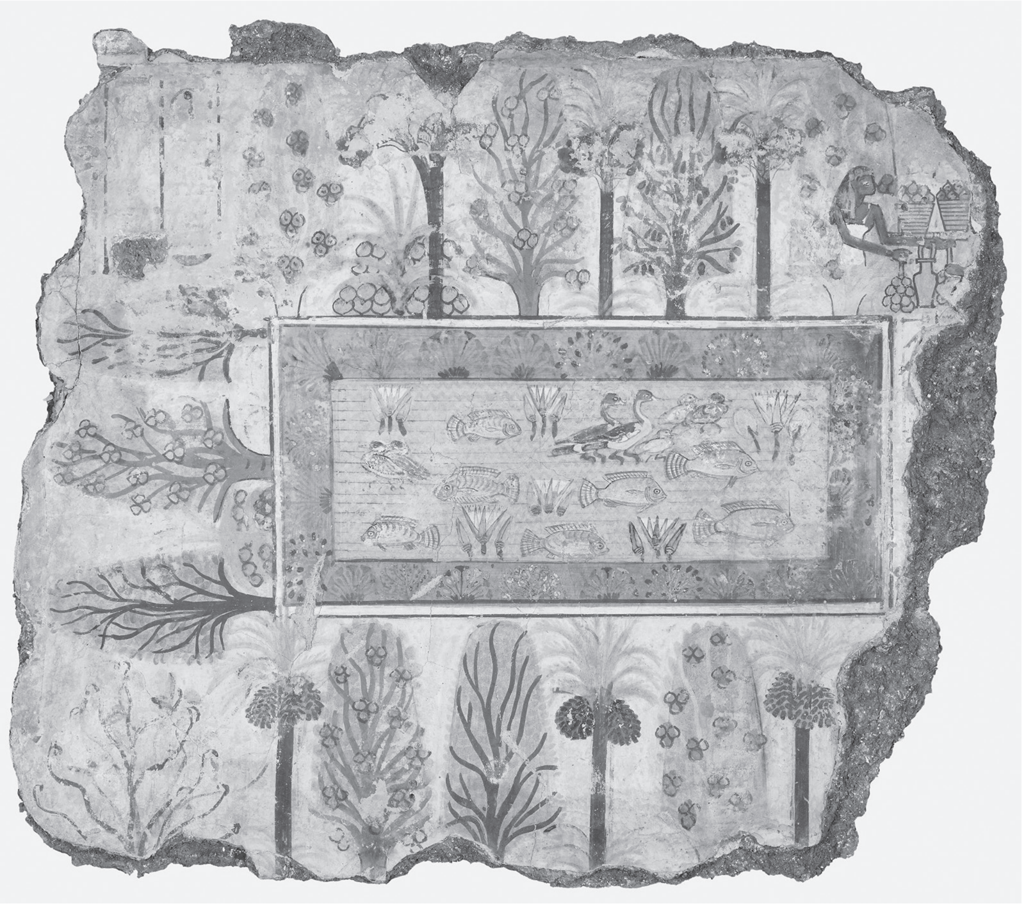

Figure 18.4. Garden scene from the tomb of Nebamun (Courtesy of the British Museum)

Meryra's T-shaped pool and its connection to the offering table (Wilkinson 1998, 11). An additional interesting feature is that the location of the garden is identified on the estate, in a position to maximise its sensory impact on visitors.

The New Kingdom examples also illustrate tomb owners in their gardens. In Nebamun's garden scene, he is depicted in the upper right corner receiving food from Nut, who is situated in a sycamore tree. In this case, the garden is the focus, while Nebamun is merely part of the scene. This differs in the tomb of Nefersekheru (Theban tomb 296), where we find Nefersekheru together with his wife drinking with their hands from a T-shaped pool. Palm trees are planted around the pool and in the water fish swim amongst lotus flowers (Feucht 1985, 30). In this scene, it is clear that the owner and his wife are depicted more prominently than the garden, which contains fewer details and elements than the garden of Nebamun. Regardless of the differences, these depictions of gardens all express an ordered natural world, which provides bounty and cool shade from the otherwise harsh environment. In addition, such features also signify the status and wealth of the garden owners, as the establishment and maintenance of the gardens would have been difficult. Thus, building and maintaining elaborate gardens must have been seen as something luxurious, reserved for the upper elite, due to the scarce resources of water and labour required to establish and maintain gardens.

The garden depictions are also useful in giving us an idea of which plants were considered the most valuable to the Egyptians, since they were deemed important enough to have been depicted in the tomb paintings and thereby brought into the afterlife. Common species depicted include sycamore trees, palm trees, lettuce, grapes, lotus flowers, and papyrus in varying compositions. This may have been due to personal preferences, size of the gardens, resources *etc*. It should be noted that the produce from the garden would have helped to create a better lifestyle for the owners and to provide for sacrifices and burial rituals (Hepper 2009, 9–11; Manniche 1989, 22–32).

Access to water was an essential and determining element in constructing and maintaining a garden. According to extant depictions, water was brought to the garden either to create an artificial pool (as seen in the tombs of Niankhkhnum and Khnumhotep, Nebamun and Meryra) or was naturally present through the garden's location near water (as in relation to Tomb 3 at Beni Hasan). For the latter, no illustration of a pool is present, though two water scenes surround the garden scene, perhaps referencing that the garden was located near water. The method of collecting water for the garden plants is also apparent in these scenes, and illustrates technological development for water transport from the Old Kingdom to the New Kingdom. In the Old and Middle Kingdom, workers are shown carrying a yoke on their shoulders, as depicted in the scene from Niankhkhnum and Khnumhotep. However, the New Kingdom depictions show workers using the shaduf, where a bucket is used to hoist up the water with a counterbalanced arm.

Maintenance of the garden was hard work for the gardeners, who had long working hours year round to make sure that all the plants in the garden were watered and tended manually. These demanding working conditions have been recorded in textual material, such as the Satire of the Trades: The instruction of *ḏwꜣ-ḫti͗i͗* (for a translation see Lichtheim 1973, 184–192, ff.187). Working conditions were heavily affected by climate, including high to sub-zero temperature ranges, high winds, and drought. For example, at Amarna, gardeners would have to work with intense sunlight, sand storms, high daily temperatures, relatively low night temperatures, and low rainfall; factors that had an enormous effect on the living conditions (Tietze 1985, 76) and that necessitated a high degree of maintenance for a successful garden.

In relation to the gardeners, it may well be noted that it was presumably the owners of the private household who oversaw the work on their own estate. However, this may have been different in regards to temple gardens. A text from the tomb of Nakht, a gardener at Thebes (Manniche 1986, 55–78) documents one of his titles as 'the gardener of the divine offerings of Amun'. As this title is mentioned several times, Manniche (1986, 67) concluded that this would have been a highly respected title, perhaps inherited from father to son for generations. If this is true then it shows a social difference between the gardeners who physically laboured in the gardens (such as those referred to in the Satire of the Trades) and gardeners such as Nakht who held important titles relating to the maintenance of high status gardens.

Archaeological evidence of gardens at Tell el-Amarna

In order to contextualise these garden scenes and to determine how accurate they are, a comparison with the archaeological evidence is required. However, examples of gardens in the archaeological record are scare, mainly because gardens have not always been properly excavated or of research interest to excavators. As such, we have limited data with which to work. However, the site of Tell el-Amarna offers a rare example, archaeological evidence of garden elements in connection to temples and private households have been found at this site. It must, however, be noted that Tell el-Amarna is not the only site where evidence of gardens have been found; the 13th dynasty palace gardens at Tell el-Dab^{c}a are another example. However, in this paper, Tell el-Amarna will act as the primary case study.

Tell el-Amarna, located on the east bank and relatively distant from the river, presented significant logistical challenges concerning the creation and maintenance of gardens. As a newly-built city, constructing a garden required that plants from previous settlements be transported to the new city, particularly mature trees. In addition, gardeners would have had to work harder in order to get the trees and plants to grow in the harsh environment, and would have had to transport water from the river over long distances. Despite these obstacles, there is evidence that gardens were indeed present at Amarna (Wilkinson 1998, 146). This can be seen in the archaeological material from the Maru Aten, where both enclosures contain the remains of sunken pools and gardens (Peet and Woolley 1923, 110–124). In the northern enclosure, a large rectangular pool was found. Woolley concluded this pool was surrounded by a garden, pointing to evidence of flowers, vegetable beds, and wood residues appearing around it (Peet and Woolley 1923, 115). On the northern side of the pool a building was excavated at which over 280 stamped seals with 130 labels with the writings 'Wine of the house of Akhenaten and wine of the temple' were found. This could indicate that the building was a storeroom for wine and possible produce harvested from the gardens. This would further support Strudwick's conclusion that gardens incorporated a variety of crops.

In addition to the Maru Aten, other areas in Tell el-Amarna contain remains of gardens. One of these is Building 200, located in the eastern part of the village enclosure. The excavation on the south side of Area xvi proved to be an open area, which had been fenced by walls from 2537 to 2361. Here, a series of small rectangular areas were found, separated by a low share of alluvial soil. It was concluded that these were plant-beds in a system containing five rows with four beds in each (Kemp 1987, 50–54). In addition to these plant-beds in Building 200, additional archaeological evidence has appeared around Tell el-Amarna with several plant beds having been found (see Chapel 570, 571 (Kemp 1985, 30–33), Chapels 528–531 (Kemp 1985, 47–48) and the main chapel (Kemp 1987, 56–60)).

All the major houses excavated in Tell el-Amarna had an enclosing wall, protecting not only the estate but also the land. Within many of these private house compounds were rectangular plant-beds, such as at houses M.47.1, N.49.10, Q.46.1, and O.48.14 (Peet and Woolley 1923, 20, 47–48). They appear to have been particularly well situated so that visitors would see the owner’s garden when arriving at the estate, as can be seen at house T.36.36 and the house of Hatiay, overseer of the King’s work (Frankfort and Pendlebury1972, 44–46, pl. XIV, 63–67, pl. XV). Many of the private houses containing a garden showed signs of having a well, instead of the pool commonly seen in tomb depictions. Since the wells could be up to eight metres deep, the Egyptians did not use a shaduf to hoist up the water, but used buckets instead. The water was then poured into jars and used to water the garden (Peet and Woolley 1923, 48).

The various settlements in Tell el-Amarna indicate that a high social differentiation existed in the city itself. Tietze (1985) examined 500 houses at Tell el-Amarna and concluded that the houses could be separated into three different groups based on construction and size. The Egyptians with the lowest rank made up 54–59%; officials and high-ranking craftsman represented 34–37%; while the wealthiest group only constituted 7–9% (Tietze 1985, 83). This suggests that it was only 7–9% of the population who had the means to build houses with thick walls around their property, which would have protected the owners’ cultivated trees and plants against the changing wind and desert sands (Bellinger, 2008, 13–14). It was thus only the limited and elite part of the population who had the space and means necessary to maintain a garden and its elements.

Besides the architectural excavations, a few botanical surveys have been carried out in the workmen’s village in order to clarify some of the remains found *in situ* from Tell el-Amarna. Renfrew conducted her studies in four different areas, respectively, P15, L18, N9, and M10 (Kemp 1985, 175–182). The excavation of P15 showed botanical residues from 12 different varieties of plants. It appears that three grain types: emmer wheat, hulled 6-row barley, and rye grass were the most common crops found in the area. Further evidence was found of watermelon, cucumber, lentil, grass pea, flax, and grape, although in much smaller quantities. During the excavation of L18 many of the same organic residues as in P15 were found especially regarding the three grain types. The remaining crops such as watermelon, lentils, peas, coriander, fenugreek, and grapes were found in significantly lower quantities. The N9 area shows the same pattern again, although less organic evidence was found than in the previous areas, with emmer wheat, hulled 6-row barley, rye grass, as well as smaller residues of watermelon, cucumber, lentils, mallow, and sedges. Besides the three grain types previously found in the other areas, area M10 showed frequent evidence of flax, as well as cucumber, lentils, coriander, dock, sedges, and Nile acacia. This botanical survey gives an insight into the plant usage at Amarna, indicating what species were planted in gardens and the types of produce consumed.

Were the depictions of the gardens an illustration of reality?

Whether the illustrations of gardens found in tomb paintings reflect reality is debatable. Manniche (1989, 7) argued that the garden illustrations would have been in close similarity to the real gardens. Szpakowska (2008, 91) has meanwhile argued that the depiction of produce in gardens, such as the lettuce in Niankhkhnum and Khnumhotep’s tomb, is likely intended as a symbolic representation or wishful depiction rather than reflecting reality. In order to assess whether or not this may be the case, in the following section the different elements set forth in garden scenes will be compared with the archaeological evidence found from Tell el-Amarna.

When looking at the representations of the garden scenes analysed in this paper it can be seen how only some set forth the terminology *k3nw* and how they are often depicted differently. Nebamun's garden is illustrated in detail, holding a primary focus in the scenes, whereas Nefersekeru and his wife are the primary focus in his garden scene. The tomb of Meryra shows the garden illustrated as a part of the depiction of his estate. Further garden scenes from the Old and Middle Kingdom show the garden itself, without the owner. The illustrations of gardens differ from each other as well, reflecting variation in the structure of the garden (such as the location and depiction of the pool), different plants, and depictions of the owner. However, the illustrations do also contain some of the same elements, such as rectangular or T-shaped pools and bodies of water, which were essential for the establishment and maintenance of gardens.

Comparing the scenes to the archaeological evidence from Tell el-Amarna raises some interesting points. There is a distinct lack of pools, which appear to have been substituted with wells. That wells require less space might be an important factor, since private gardens were smaller than those of the temples and palaces. The depictions of pools in the tombs may be due to an idealised desire to have an illustration of a pool for the afterlife. Pools can, therefore, on this basis be said to have had a symbolic effect rather than being a true representation (Eyre 1994, 65; Geßler-Löhr 1983, 469–76). However, in temple and private chapel contexts we do seem to have evidence for T-shaped and rectangular pools. This can be seen at the Maru Aten, where two rectangular pools were found in addition to numerous T-shaped pools found in a room in the north-eastern corner of the enclosure. Therefore, when comparing instances of pools in the tomb paintings to the archaeological evidence from Tell el-Amarna, it would appear that the tomb paintings are primarily concerned with religious and social aspects rather than reflecting reality. However, this conclusion is merely based on Tell el-Amarna; an examination of sites in closer proximity to water, such as Tell el-Dab^{c}a, may provide different conclusions. However, without further extensive research it is difficult to fully conclude whether the depictions of the pools are closer to reality than the evidence at private households from Tell el-Amarna indicates.

Comparing the illustrations of plant species in the private tombs with the botanical evidence gathered from Tell el-Amarna also highlights discrepancies. The range of species apparent in the scenes is not fully supported in the botanical remains. However, there is evidence of other plant types and herbs not included in the scenes. These included the different kinds of grain but also evidence of watermelon, cucumber, lentil, coriander, fenugreek, Nile acacia, and grape. Although many of these are found in relatively low amounts, such research suggests that they existed and thus very likely may have been part of the native Egyptian diet and were grown in gardens. The lack of archaeological evidence for the material depicted in the tombs could be due to a lack of preservation or interest in botanical evidence on the part of excavators taking samples *in situ*. One relevant example is found at the Maru Aten, where Woolley noted the findings of flowers and vegetables, but did not take any samples or record any species identification. Another reason for the differences between the illustrations and botanical remains may be that only a very small part of the private estates and households were excavated and sampled.

However, the depiction of plant-beds in the tomb scenes as small clustered squares finds parallels in the archaeological remains at Amarna. The best-preserved example of these beds was found at Building 200, where it is believed that a total of 20 beds were constructed in tight rows. It would appear then that the depictions of plant-beds for vegetables, flowers, or other crops in the tomb paintings are accurate representations of how the Egyptians constructed their gardens.

Another parallel can be found in the positioning of the garden, which, judging from the illustration of Meryra's garden, was in a prominent position of display in the estate. The archaeological evidence at Amarna seems to support this positioning, with prominently placed gardens in houses T.34.1, T.34.4, and the house of Hatiay. The garden's location was such that the visitors were not able to ignore the ordered splendour and vigour of their host's garden.

A final comparative point to consider is the presence of the wine sealings in the garden building at the Maru Aten. These allusions to wine production in a garden context could lend further support to the idea of the garden being used to grow a variety of different crops, including grape vines. In this case, the depictions of varied crop tending and harvesting at Beni Hassan may be indicative of a single garden, rather than a series of different garden contexts.

Conclusion

Garden owners who could afford the costly establishment and maintenance of a garden would have chosen to do so in order to emphasise their wealth and power. However, gardens also provided a relaxing environment with shade and cooler air, which their owners could enjoy in addition to a range of different produce. As status markers, elites chose to depict these gardens in their tomb paintings, which symbolised and signified their place in the upper tiers of society. These garden scenes shared a series of common elements, including the presence of pools and bodies of water, a variety of tree and crop species, and a style which emphasised a carefully constructed and ordered natural world. Despite these shared elements, the gardens were also depicted quite differently, depending on status, wealth, personal preferences, and available space.

It can be concluded that the depictions are, to a large extent, aligned with reality, since the archaeological evidence supports the existence of the gardens and some of the depicted elements such as pools, walls, and plant beds. Nevertheless, the illustrations of the gardens sometimes conflict with the archaeological evidence. For example, gardens are seen depicted in an idealised beauty with pools, crops, and blossoming plants. At the same time, archaeological material indicates that private homes had wells and more regular, mundane crops. Therefore, it may be concluded that while the depictions in tomb paintings are largely accurate, they also contain exaggerated elements guided by other underlying factors.

This study has illustrated that gardens held an important place in ancient Egyptian society, as a place of relaxation and display but also as a part of elite iconography and religious belief. It is hoped that this analysis will contribute towards a wider awareness, appreciation, and discussion of the role of gardens in Egyptian society.

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19

The Art of Embalming: A Macroscopic and Radiographic Evaluation of Decorative Techniques Applied to Mummified Votive Egyptian Mammalian Remains

Lidija M. McKnight

Introduction

Votive animal mummies were produced in large quantities as oracular devices and focal points for worship. Their production was a high-output activity with millions produced between the twenty-sixth dynasty and the Roman Period (*c.* 664 BC–AD 395) for both state and personal religious activity (Ikram 2005, 7; McKnight 2010, 6; Taylor 2001, 254).

Primary artistic or documentary evidence regarding the manufacture of votive offerings in ancient Egypt appears not to have survived. Instead, details pertaining to the profession were likely to have passed between generations of embalmers by way of oral tradition. It would be reasonable to assume that votive offerings manufactured by embalmers employed in the same workshop would produce similar objects; although the diverse range of styles and levels of decoration may also represent an element of artistic licence and the personal style of those who created them.

This paper describes results of the macroscopic and radiographic investigation of mummified mammals, highlighting production methods and the variety of mummy bundles created. Further stylistic research using the animal mummies in the Ancient Egyptian Animal Bio Bank is proposed.

Materials and methods

Research as part of the Ancient Egyptian Animal Bio Bank project, University of Manchester (McKnight *et al.* 2011), identified 30 mummy bundles macroscopically identified as mammalian, which displayed some level of external decoration from museum collections in the UK and USA (Table 19.1).

Macroscopic investigation

Macroscopic investigation remains a viable method of analysis, due to difficulties accessing mummified remains, either in the field or museum collections, and limited access to specialised

Table 19.1. Table demonstrating the provenance and current location of mummies in the study group.

Bio Bank No.	**Museum**	**Museum Acquisition No.**	**Macroscopic Identification**	**Geographic Provenance**
16	Bristol Museum and Art Gallery	‘kitten mummy’	Feline	Unknown
17		Ha6357		Beni Hasan
18		Ha6358		Unknown
19		Ha6356		Beni Hasan
30	Garstang Museum, Liverpool	H5425		Beni Hasan?
57	Manchester Museum	6842, MM13		Unknown
58		1977.1162, MM14		
64		MM36		
78		6293, MM4		Beni Hasan
85		9849, EA16/2a, MM35		Unknown
103	Bolton Museum and Art Gallery	1:1983:87, DOAY034		
144	Brewhouse Yard Museum, Nottingham	NCM 1933-281/1		
168	Oriental Museum, Durham	EG721		
169		EG720		Saqqara?
174		EG726	Canine	
289	Museum of Fine Arts, Boston	72.4906	Ovis	Unknown
310		6012	Feline	
313		6016		
315		6018		
344		6048		
349		6053		
350		6054		
352		6056		
376		6081		
388		6099	Canine	
398		6109	Animal	
473	New Walk Museum and Art Gallery, Leicester	L.A45.1859.0.0(a)	Feline	
474		L.A45.1859.0.0(b)	Feline?	
595	Old Speech Room Gallery, Harrow School	1910 HE 1077	Feline	
701	Truro Museum, Cornwall	Mao – 406		

analytical equipment. A comprehensive photographic record was created for all bundles, which enabled detailed documentation of the external wrapping techniques, stylistic variations, and the state of preservation. The majority of specimens in the study group were geographically and chronologically unprovenanced due to their acquisition through auction houses, as bequests from private collectors, and through incomplete museum records.

Radiographic investigation

Imaging enabled the non-invasive study of wrapped mummy bundles and proved particularly relevant in animal mummies where the range of species represented was exhaustive (Table 19.2). The technique was initially employed to assess the nature of the contents of the wrapped mummy bundles; however, it became clear that it was useful for demonstrating the mummification techniques and wrapping methods.

Table 19.2. Table summarising the results of the radiographic and macroscopic investigation.

Macroscopic Investigation	**Mummy Category**	**No. of Specimens**	**MNI**	**Bundle Form**	**Decoration**
Feline	True	11	1	Skittle	Striped decoration from linen and decorated facial features.
		1	<1		Lozenge pattern from linen, shrouded rear aspect and decorated facial features.
		1	1		Lozenge pattern from linen and decorated facial features.
		1	1		Crude striped decoration on the post-cranial aspect with no facial decoration.
		4	1		Crude striped decoration on the post-cranial aspect with facial decoration.
		1	1		Damaged to reveal layers of thread bound horizontally around the bundle.
		3	1		Linen shroud with facial decoration.
	Pseudo	1	N/A		Striped decoration from linen and decorated facial features.
		1			Lozenge pattern on the post-cranial aspect, shrouded rear and decorated facial features.
		1			Plain shrouded bundle, no facial decoration.
Canine	True	1	<1	Skittle	Lozenge pattern on the frontal aspect, shrouded rear and decorated facial features.
		2	1		Lozenge pattern on the post-cranial aspect, no facial decoration.
Ovis	True	1	1	Seated	Striped decoration on the breast area, shrouded body and decorated facial features.
		1			Woven decoration on breast area, shrouded body and decorated facial features.

The 11 mummies from the Museum of Fine Arts, Boston were imaged using plain film radiography (XR) at the Brigham and Women's Hospital, Boston, in 1983 (D'Auria *et al.*1988, 246). Computed tomography (CT scanning) was not conducted on the animal mummies in this collection at this time. Digital radiography (DR) was conducted on the three mummies from the Oriental Museum, Durham, for an MSc project at the Archaeology Department, University of Durham (Hadi 2011). The feline mummy from the Old Speech Room Gallery was imaged by Mr. Robert Hill, Consultant Orthopaedic Surgeon at The Portland Hospital, London using DR and CT.

The remaining 15 mummy bundles were imaged at the Central Manchester University Hospitals NHS Foundation Trust between 2001 and 2012. XR was in place from 2001 to 2006 (Philips Medical System, Germany) with images obtained at 57kV 1mAs with a focal spot size of 0.6 mm. Computed radiography (CR) was used between 2007 and 2010 (Philips Medical System, Germany) with DR implemented from 2011 onwards (Siemens Medical System, Malvern, Pennsylvania). Dual projection imaging (antero-posterior and lateral) was routinely conducted to ensure an optimum perspective of the specimens. From 2007 onwards, CT was conducted as standard (General Electric LightSpeed 32 row multi-detector, Milwaukie, USA) with helical volumetric scans obtained using 120 kVp, 200 mA, a pitch of 0.969:1, rotation of 0.6 seconds giving a slice thickness of 0.625 mm. In 2011, this was replaced with a 64 row multi-detector scanner (General Electric LightSpeed, Milwaukie, USA).

Results and discussion

The results of the macroscopic and radiographic analysis of the mammalian mummy bundles are displayed in Table 19.2.

Nature of the contents

True and pseudo mummies

The bundles in the study group were categorised as true and pseudo mummies based on their internal contents with a ratio of 27: 3, respectively. True mummies contained animal skeletal material, which acted as a core around which the bundle was created. In bundles that contained fragmentary skeletal remains, these were supplemented with structural materials to create the form. Pseudo mummies were solely constructed from such supplementary material, in the form of sticks, reeds, mud, sand, and stones (McKnight and Atherton 2014, 109).

Anatomical position

Imaging demonstrated the anatomical position of skeletal remains in true mummies. Feline and canine mummies were described as being constructed in a 'skittle' form, with the forelimbs placed down, the hind limbs flexed upwards and the tail positioned between the legs and up towards the breastbone, as demonstrated in BB17 (Fig. 19.1) (Zivie and Lichtenberg 2005, 116). One exception, BB310, a feline mummy, resembled the skittle mummies in external form, yet imaging highlighted that the forelimbs were outstretched as if 'begging' (Fig. 19.1).

The two ovoid examples were positioned as though seated, as demonstrated by BB289 (Fig. 19.1). No differentiation could be made between the external form and the content of the mummy bundles in the study group, as both true and pseudo bundles appeared identical in their external construction.

Bundle construction

Intentional modifications

Imaging highlighted that the embalmers had made deliberate attempts to elongate the complete mummy bundle in four cases. BB30 (Fig. 19.2) and BB174 (Fig. 19.3) contained less than one complete individual, with the bundles modelled as though complete. In both cases, the skeletal remains were placed in the post-cranial section of the bundle and a false head was added. BB16 and 58 contained complete skeletons, but the total bundle length was far greater than that represented by the skeletal contents. In these cases, the cranial remains were positioned in the 'head' of the bundle, with elongation at the base.

Organic materials

The use of organic matter as a supplementary construction material has been widely reported in wrapped animal mummy bundles (McKnight 2010). One example (BB174) was identified during macroscopic investigation to display organic material, thought to be a form of papyrus stem (*Cyperus papyrus*), flattened and bound in concentric circles around the bundle (Fig. 19.3). This appeared to be an intentional addition for decorative purposes prior to the shrouded layer being applied to the rear and lateral aspects. Imaging revealed organic matter intentionally placed within the bundle to form the framework for the snout (Fig. 19.3). This practice was extensively recorded in avian, crocodilian, and piscean mummies (Atherton 2012, McKnight 2010, and Atherton-Woolham, this volume).

False heads and feet

False heads were noted in two mummy bundles (BB30 and 174). The addition of false heads in these examples was likely due to the fact that they contained incomplete skeletal remains with absent crania (Figs 19.2 and 19.3).

Post-mummification damage

Damage, although detrimental to the overall stability of the artefacts, enabled insight into internal areas of the bundles, which in turn aided interpretation of their macroscopic and radiographic evaluation. The mammalian mummy bundles demonstrated varying degrees of damage due to the fragile nature of the linen wrappings and accoutrements applied to the external aspects. False ears and eyes were frequently recorded as missing or incomplete, yet in most cases it was possible to note where decoration was once present due to corresponding areas of damage to the bundle.

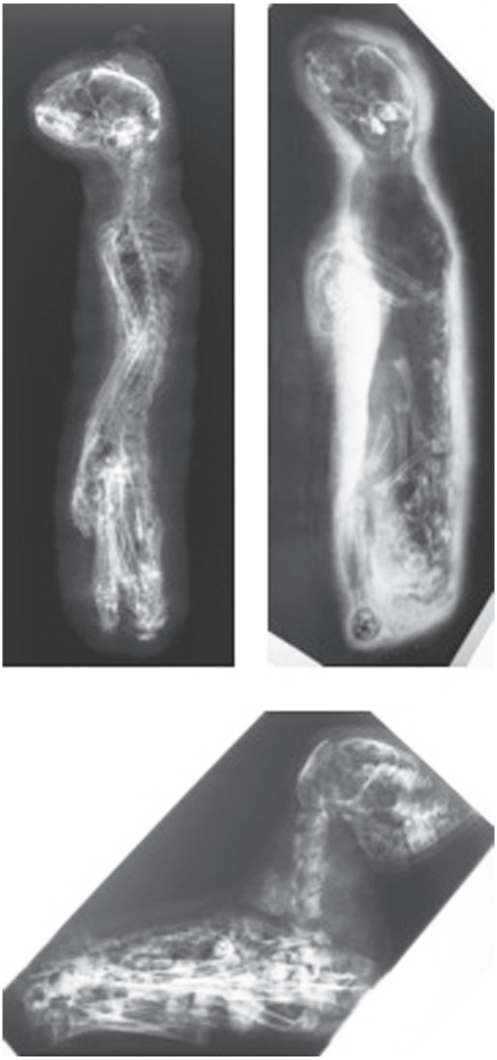

Figure 19.1. Radiographs of BB17 (top left), BB310 (top right), and BB289 (bottom) showing the position of the skeleton. Reproduced by kind permission of the Museum of Fine Arts, Boston.

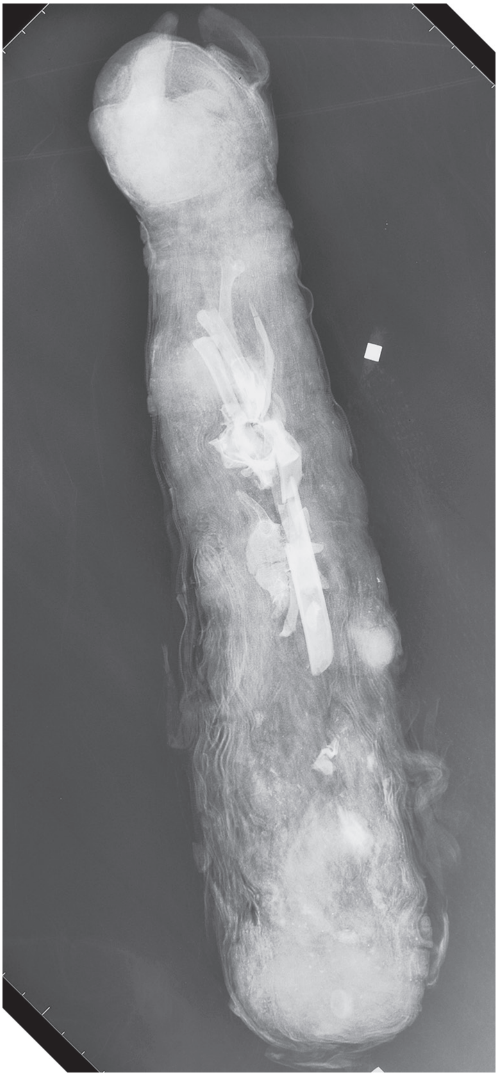

Figure 19.2. Oblique radiograph of BB30 showing the position of the fragmented skeletal remains in the mid-section of the bundle. The false head is clearly visible.

Patterns created from linen often displayed damage and it was noted that where multiple linen colours were used, the darker shades were often markedly less well preserved (Fig. 19.4). The reasons for this were unclear; however, it was possible that procedures used to dye the linens somehow weakened the cellular structure of the fabric over time. Further research is needed to explain such findings.

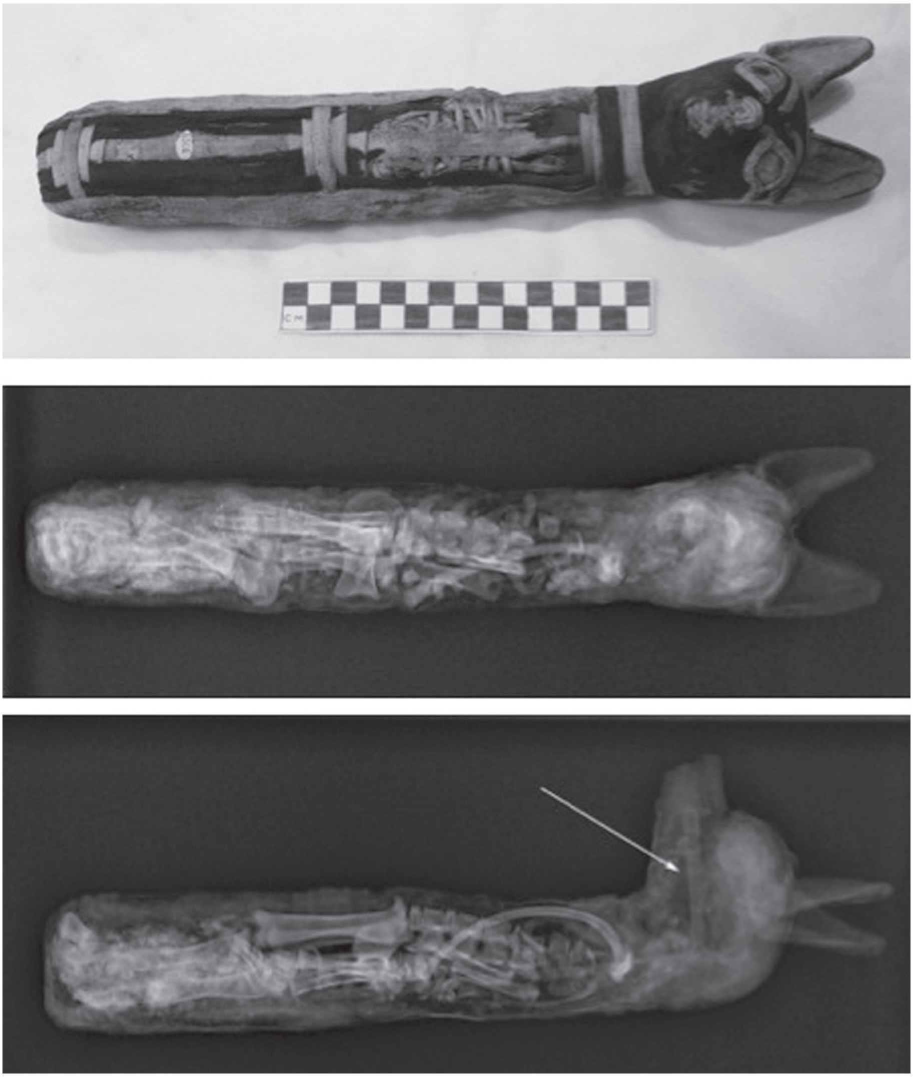

Figure 19.3. Photograph, antero-posterior, and lateral radiographs of BB174. The bundle, modelled on a juvenile canine, contained the fragmentary remains of a larger canine individual. The false head was constructed from linen, with what appeared to be a strut (arrow), probably an organic component such as a stick, placed to form the framework of the snout.

Decorative features

Facial decoration and modelled features

The application of facial decoration to the external aspects of the bundles was perhaps the most striking and endearing quality of decorated mammalian mummy bundles, which provided a stylised, 'lifelike' appearance. The decorative facial features (eyes, nose, eyebrows, hairline,

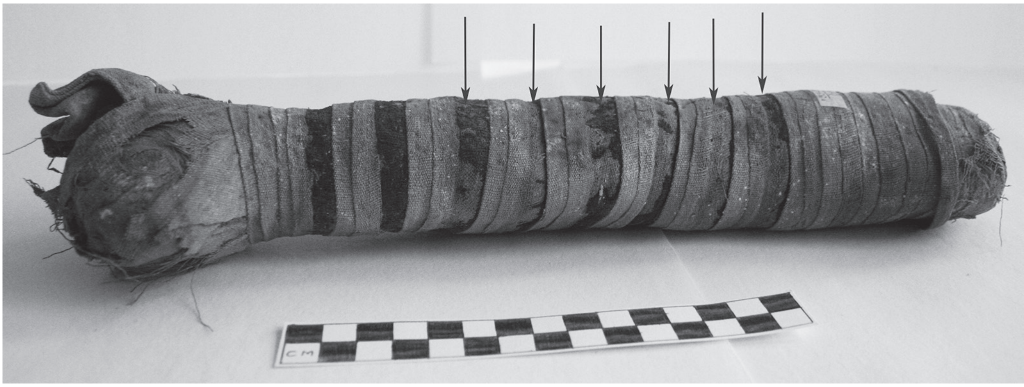

Figure 19.4. Photograph of mummy BB144 showing the high level of compression and the degradation of the darker linen layers used to create the striped pattern.

wig, and ears) were visible in seven examples as black or red 'paint' applied as a series of lines and dots. In some cases, the decoration appeared highly stylised, almost to the point of caricature.

False ears modelled from folded linen (or evidence that they were once present), were a common feature, represented by 26 of the 30 mummy bundles examined (Fig. 19.5). They were distributed evenly between true and pseudo bundles, and across all species. They often appeared rigid in form, suggesting that mummification unguents were applied to the linen to give the ears a more 'attentive' appearance. Research showed the cartilaginous structure of the ear often became flattened to the head in mammalian mummies, so false ears enabled a life-like representation to be achieved. CT was instrumental in depicting the techniques used in their construction (Fig. 19.5).

False eyes created from linen were noted in 11 examples, with five examples of painted eyes, as demonstrated by BB18 (Fig. 19.5). All three canine mummies (BB174, BB376, and BB388) possessed false eyes created from linen and edged in a contrasting colour to add impact (Fig. 19.6). Striking similarities between these mummies were sufficient to suggest that they may have originated from the same site or workshop. However, due to a lack of definitive provenance information, it has not been possible to offer its location.

Intentional construction of the face created by the addition of super-cutaneous linen 'padding' to form features was noted in 14 cases. In damaged specimens, these rolls were visible macroscopically; however, imaging of the undamaged examples demonstrated their presence and construction method. Rolls of linen placed longitudinally created the nose and snout, with small 'button-like' linen pads pressed either side to create the depressions of the orbits. In four cases, linen was used to give the impression of a more pronounced muzzle as demonstrated in BB18 (Fig. 19.5). Three mummies (BB376, 388, and 315) demonstrated evidence of a coating applied over the linen of the face, which produced a smooth outer layer upon which decoration was then applied (Figs 19.6 and 19.7).

One specimen (BB315) appeared upon external investigation to resemble a mongoose with an elongated snout; however, imaging confirmed the presence of a feline skeleton (Fig. 19.7). This may represent the work of a less experienced embalmer or simply an expression of artistic licence.

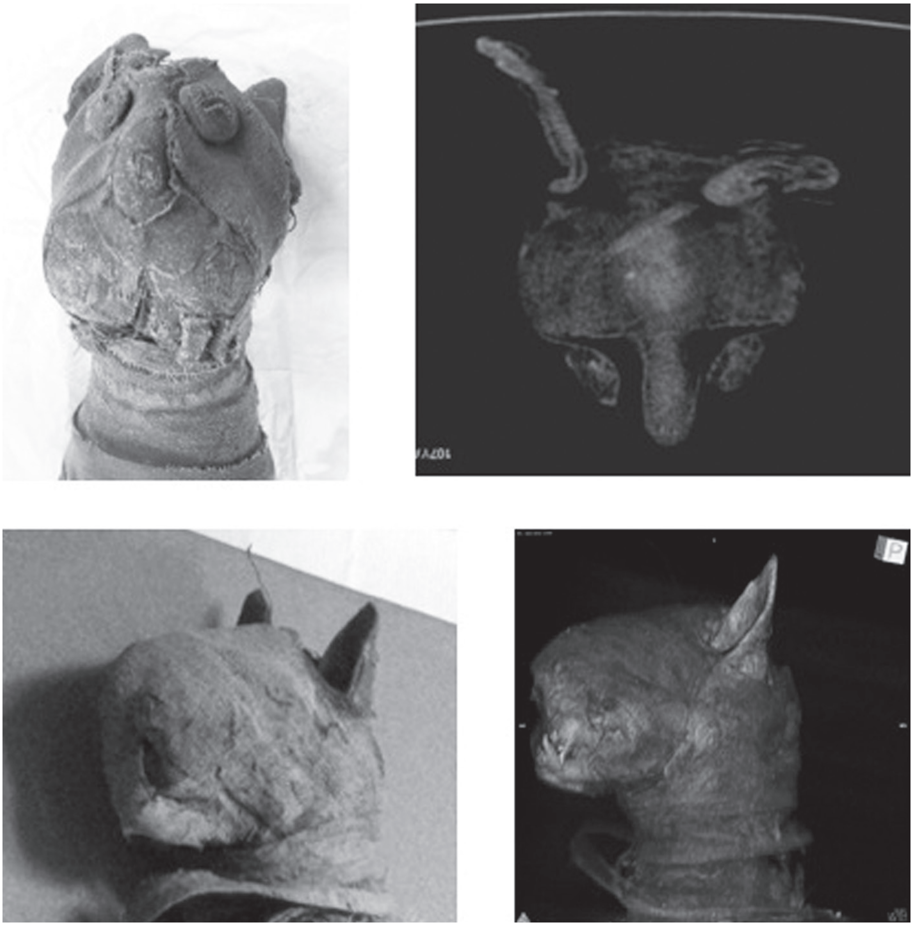

Figure 19.5. Top: Photograph and CT reformat of BB18 showing the use of linen rolls to create the impression of the muzzle and false ears, and indentations to form the orbits. Bottom: Photograph and reformat of BB595 showing the formation of the false ears from 'pinched' squares of linen positioned to each side of the cranium (Image by kind permission of Mr. Robert Hill, HCA International).

Wrapping techniques

Linen was generally employed as the wrapping medium; however, the method by which the linen was applied varied considerably. Imaging proved useful in the identification and clarification of different wrapping techniques. Of particular note was the layering of bandages applied at varying thicknesses and compressions; many mummies demonstrated a double or triple-stage wrapping method. CT added information in these cases, revealing an innermost layer applied tightly around the body in concentric circles, before a looser middle layer followed by a tightly applied outer layer. This suggests that wrappings were applied in stages either by different embalmers, using different quality linens or at varying time periods throughout the mummification process.

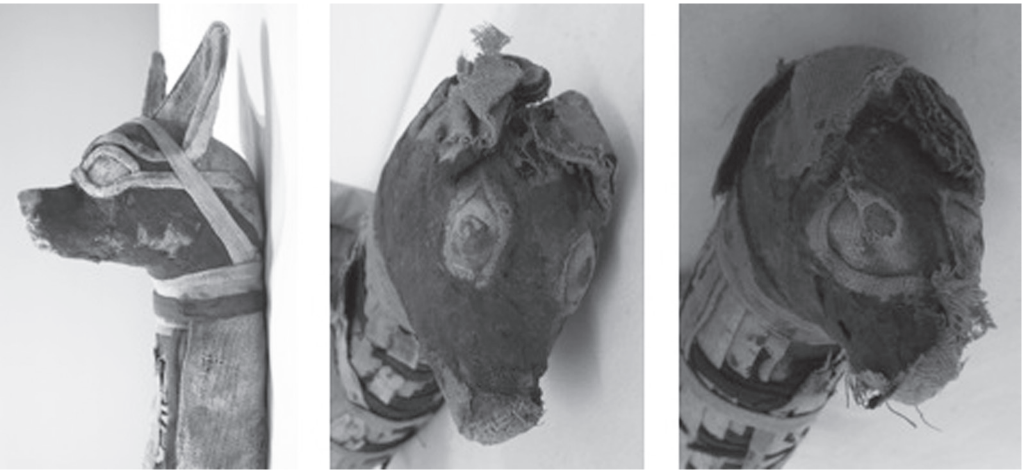

Figure 19.6. Photographs of three canine bundles (left to right – BB174, BB388, and BB376) displaying linen detail around the eyes.

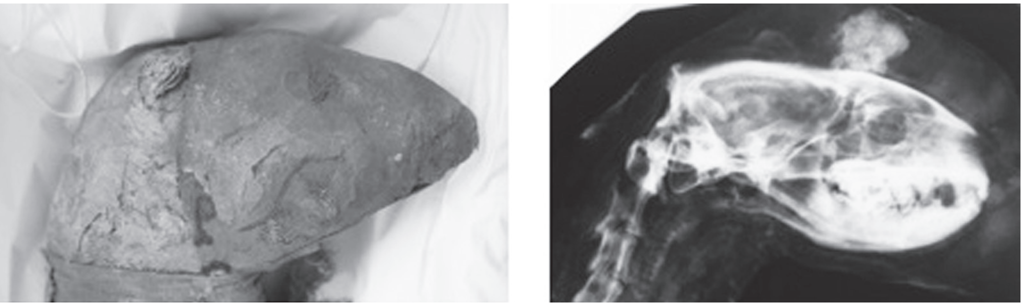

Figure 19.7. Photograph and radiograph of feline mummy BB315 with an elongated snout more reminiscent of a mongoose.

Patterns

A variety of decorative patterns created from linens of various weaves and colours were highlighted macroscopically. The patterns were arranged to create stripes (Fig. 19.4), square (Fig. 19.6), and rhomboidal geometric designs, a herringbone effect, and interlocking lattices (Fig. 19.8) placed over the main body of the bundles.

Shrouds

Eleven mummies (nine true, two pseudo) displayed plain linen shrouds visible macroscopically, which covered the post-cranial aspect of the bundle (Fig. 19.10). In six of these mummies, the shroud covered the whole bundle, whereas five mummies demonstrated a decorative panel to the frontal aspect, with a shroud to the rear and lateral aspects. Facial shrouds were noted in

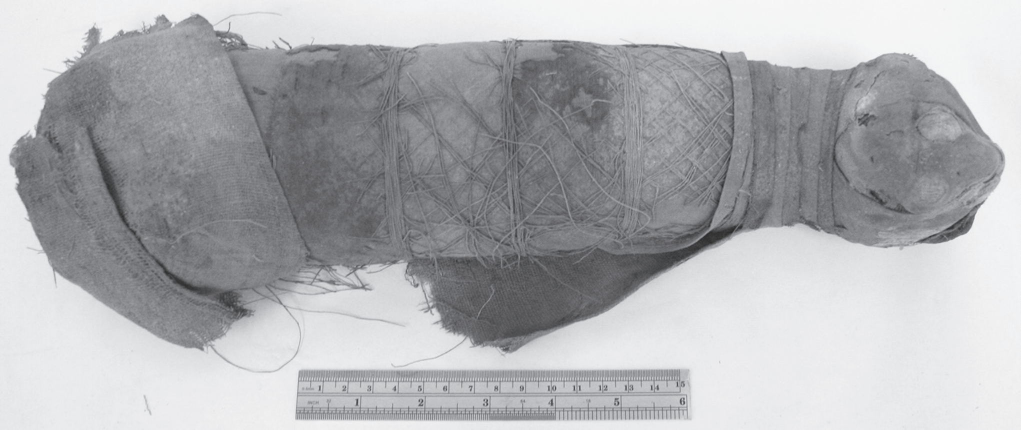

Figure 19.8. Photograph of BB352 showing the exposed lattice layer of thread applied to the bundle.

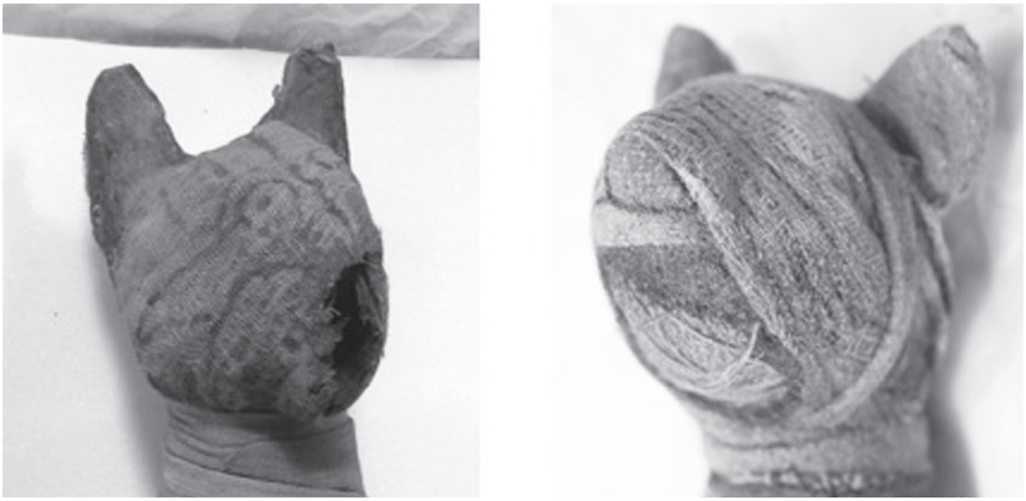

Figure 19.9. Left: Photograph of BB19 demonstrating the complete facial shroud and Right: BB169, the partial style.

25 bundles (Fig. 19.9), which covered the entire cranial aspect and were gathered at the neck (11 cases); or a wide band of linen that began at the rear of the head and was applied around the front of the face (14 cases).

Thread

Three mummy bundles within the study group (BB289, 349, and 352) demonstrated evidence of fine thread applied to the bundle over layers of linen. BB349 was damaged on the external wrapping layer, exposing fine thread wrapped in concentric circles around the total length of

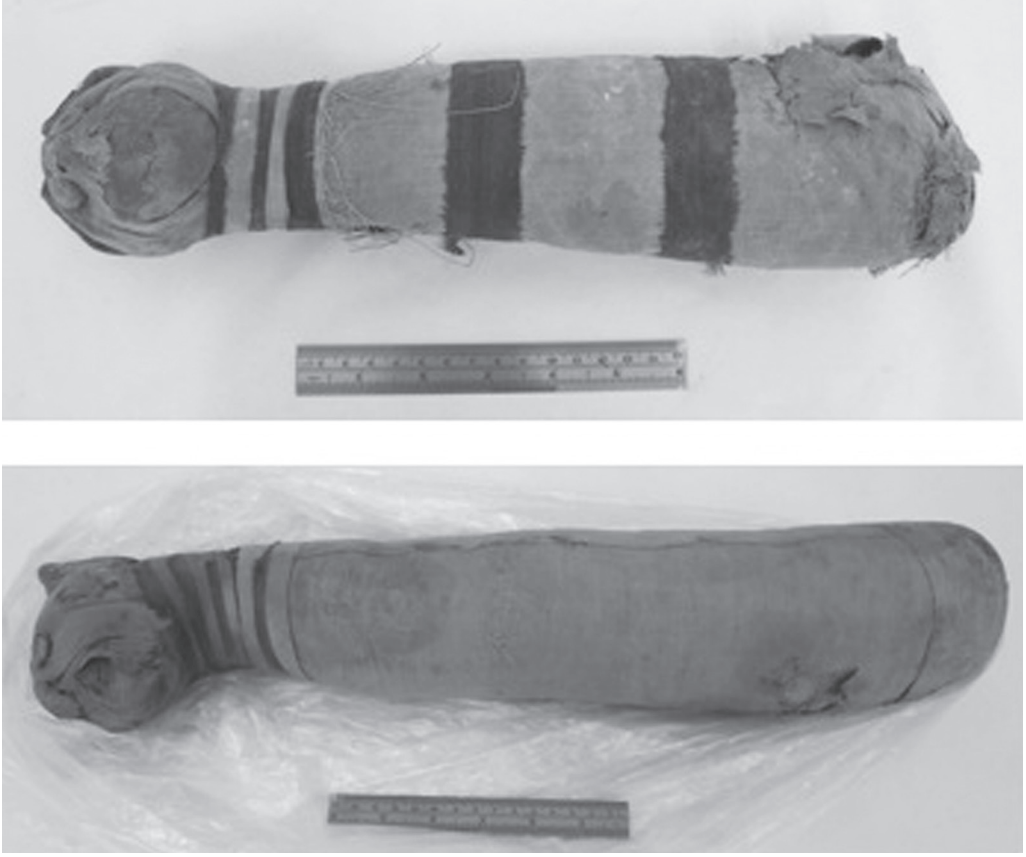

Figure 19.10. Top: Photographs of BB313 and Bottom: BB310 showing the distinctive collars constructed from horizontal bi-coloured linen bands.

the bundle. BB289, an ovoid mummy bundle, showed a damaged facial shroud exposing thread underneath applied in a haphazard fashion; whereas BB352 showed thread applied in a lattice formation, interspersed with horizontal bands at regular intervals (Fig. 19.8).

Thread was previously recorded on avian mummies studied for the Bio Bank project (Atherton 2012; McKnight 2010) and may represent intentional decoration in some cases (BB352), or as an internal penultimate layer prior to the application of the final outer layer (BB289 and 349).

Collars

Seventeen wrapped bundles within the study group of both true and pseudo examples were provided with a decorative ‘collar’ around the neck. The collars were created from single or multiple narrow bands of linen placed horizontally around the neck (Figs 19.4, 19.6, 19.8 and 19.10).

Conclusion and future work

The combined macroscopic and radiographic analysis of 30 wrapped mammalian mummy bundles revealed a wide variety of decorative construction techniques. Macroscopic investigation enabled documentation of external decoration and style, with damaged mummies allowing insight into the construction methods employed. Imaging proved particularly useful in clarifying the internal composition and construction methods of wrapping techniques and modelled features, particularly where facial adornment was added. Most importantly, in the case of intact, well-preserved mummies, non-invasive imaging techniques provided insight into bundle construction without facilitating damage. XR, CR, and DR techniques provided initial clarification on the presence or absence of skeletal remains, with CT providing further information on the construction methods employed. Research on this study group indicated that external decoration was applied to both true and pseudo mammalian mummy bundles suggesting, in this research at least, that there is no direct correlation between internal contents and external appearance. Further work is proposed to establish if this is the norm across all species mummified in ancient Egypt.

Further research is underway to propose a typology of the stylistic variation noted on mummified animal bundles. Of particular interest is the inference of decorative trends across collections, enabled by a large data set such as that offered by the Bio Bank. In the identification of provenanced mummies, it is hoped that a comprehensive chronological and geographic framework within which to place unprovenanced bundles will be formulated. Stylistic similarities between mummies suggest that such examples could be assigned to a particular site and even workshop (Fig. 19.7), which will enable an improved understanding of the votive mummy industry.

Acknowledgements

Copyright for the all images used in this paper (except where stated in the figure legends) belongs to the authors in conjunction with the Ancient Egyptian Animal Bio Bank project at the University of Manchester.

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20

A Database of Polychrome Hieroglyphs: Objectives, Methods, and Future Development

David Nunn

The project

This paper outlines the methodology behind a new initiative undertaken by the author at the Université Libre de Bruxelles, Belgium. It expands upon the information presented in a poster at CRE XV. The goal is to produce a palaeography of polychrome hieroglyphs, including a canonical list and an analysis of colour symbolism in hieroglyphic inscriptions. It is also hoped that the database will enable researchers to identify some obscure signs, reassign others, and generally assist in the analysis of Egyptian cognitive categorisation.

It has been some forty years since Staehelin published an introduction to the semiotics of polychrome hieroglyphs (1974, 49–53), followed sixteen years later by her analysis of inscriptions in Ramesside royal tombs (1990, 101–119). Although much important work has since been carried out on the subject of polychromy (Davies (ed.) 2001), the focus has tended to be on the composition of pigments (*e.g.* Green 2001), wall painting techniques (*e.g.* Bryan 2001), and the general symbolism of colours used in painting (*e.g.* Pinch 2001). In other developments, several lexical studies of colour terms in Egyptian have built on the work of Berlin and Kay (1969) to shed new light on ancient colour perception and symbolism (*e.g.* Baines 1985; Quirke 2001; Warburton 2008). Although these recent studies have obvious relevance to this project, there has, until now, been no systematic recording, consolidation, and analysis of individual polychrome hieroglyphs – apart from the publication of some lists of polychrome data (see infra: Descriptive Lists) – which aimed to produce a canonical list. It is worth summarising here the benefits of further research as outlined by Staehelin (1974, 52–53):

- An improved understanding of the objects represented by the hieroglyphs.
- A more assured reading of certain signs according to their colouring.
- The restitution of partial lacunae where traces of colour remain.
- Improved dating, especially for dynasties 18 and 19, which saw some changes in the use of polychromy.

However, further progress in this field has been hampered by the lack of documentation, especially in the form of coloured reproductions of suitable inscriptions. Even today, when digital photography has revolutionised the world of scientific publication, many hieroglyphic texts are still reproduced as monochrome plates or as facsimiles. The following quotation is still relevant today after more than eighty years: 'All previous discussions of colour have been more or less limited by the lack of reproductions adequate in quality and number, and this difficulty is as yet by no means removed' (Williams 1932, 39). The polychrome hieroglyph database aims to fill that gap.

Methodology

The repository

From the very outset of the project, it was decided to use a computerised data repository as the basis for recording, collating, and analysing the individual hieroglyphs, for the ease of development, use and presentation. After comparison of three database management systems, the platform chosen was Microsoft Access, based on its potential for rapid development, its powerful query language, its programmable functions (using simple macros), and its flexible import/export features (*e.g.* Excel, XML, HTML).

It was decided that Gardiner's sign list (1964, 442–548) would form the basis of the study, as it provides a reliable collection of the most common hieroglyphs in use throughout the pharaonic period. It was not feasible to include all the signs in use during the Ptolemaic period, as only a very small percentage would have yielded a polychrome sample. However, if such signs are encountered during the study and are deemed sufficiently interesting, they are added to the database sign list either as a variation on Gardiner's numbering (*e.g.* D 45*: a two-handed version of D 45), or using the numbering of the hieroglyphic composition software VisualGlyph (*e.g.* D 119: a pair of wedjat eyes, left and right).

Gardiner's grouping of signs was maintained in spite of some of his idiosyncratic choices: for instance, the absence of a group J, or the inclusion of an extra group Aa of unclassified signs at the end of the list, which proves difficult to sort, as in a standard alpha-numerical A–Z sort, Aa follows A and not Z as in Gardiner's list. In the first of the series *Paléographie Hiéroglyphique*, Meeks chose to regroup the signs in a more logical and computer-friendly fashion (2004, xix). However, the abandonment of Gardiner's sign list could lead to confusion. To avoid any problems when sorting data by Gardiner's groups, the primary key of the database Group table is simply a number, with group A as 1 and group Aa as 26. These numbers are invisible to the user who only sees the equivalent group code as in Gardiner's list.

Nevertheless, Meeks' use of unique paragraph numbers to refer to each exemplar in the canonical list will be adopted here, as it allows greater flexibility and clarity in the designation of hieroglyphs, where only a subset of the complete sign list is present. It also allows duplicate exemplars for a sign, where the colouring is divided clearly into separate groups. A good example of such a duplicate is the sign for the heart, F 34, which is generally either red with white markings or white with red markings.

The tables and their relationships

Two tables were created, with one containing the groups and the other the signs. Gardiner's order of groups and signs was followed, as were his descriptions. The use of each sign and most of the values were also added to the Sign table in simplified form. Further research into individual signs was made, not only in Gardiner but also in the many dictionaries and grammars now available, most of which contain extensive sign lists (*e.g.* Allen 2000, 423–452; Bonnamy and Sadek 2010, 804–974; Hannig 2006, 1323–1451).

Other Reference Tables

- The Period table, containing historical periods (dynasties, kingdoms, *etc.*) with their corresponding dates (as given in Shaw 2000, 480–489).
- The Bibliography table, containing references to the major works used in documenting the individual polychrome inscriptions.
- The Colours table, used as a key to individual samples and as a restricted list of basic colours.
- The Monument table, each entry being the description of the object that contains a particular inscription. This table has links to the Period table as well as to the Bibliography table.
- The hub of the database is the Occurrence table. This is where all the individual samples are stored, together with their description, colour(s), image (if available), and context. There are direct and indirect links to this table from all those in the database.

Figure 20.1 contains a simplified entity-relationship diagram. The arrows between each entity represent the type of relationship. A one-directional arrow, the most common, indicates a one-too-many relationship. This means that an item in table A can have many occurrences in the linked table B, whereas an occurrence in B can only belong to one item in A. A good example is the relationship between Group and Sign where a group contains many signs, but a sign belongs to only one group. A bi-directional arrow represents a many-to-many relationship. This means that an item in table A can have many occurrences in table B, but that an item in table B can also have many occurrences in table A. This is the case, for instance, of the relationship between the tables Occurrence and Colour, where a sample hieroglyph can have many colours, whereas a particular colour can be found in many samples.

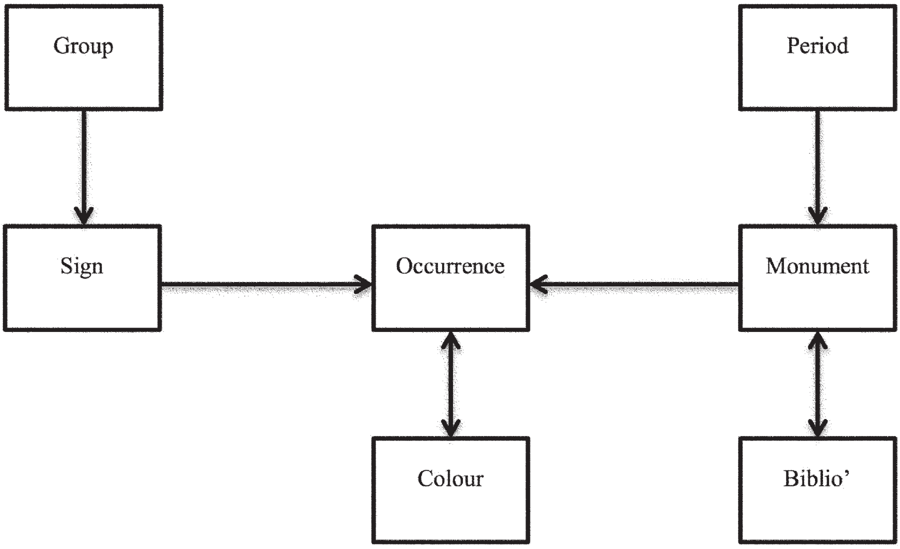

Figure 20.1. A simplified entity-relationship diagram of the database.

Monument

The term is used here in the broad sense of any object (temple, tomb, sarcophagus, *etc.*) containing an inscription written in polychrome hieroglyphs. Monuments have been selected according to the three following basic criteria of availability: descriptive lists, colour photographs, and visual examination.

Descriptive lists

Few publications before 1970 give any indication of the precise use of colour in inscriptions. One notable exception is the comprehensive list of Old Kingdom coloured hieroglyphs to be found in Smith's encyclopaedic study of Old Kingdom sculpture and painting (1949, 366–382). This list is the source for much of the data concerning this period.

Pioneering work by Müller (1940, 109–111) led to a German tradition of systematic recording of polychrome hieroglyphs, exemplified in the series *Archäologische Veröffentlichungen* from the Deutsches Archäologisches Institut (e.g. Moussa and Altenmüller 1971, 46). These lists have proved invaluable, especially where colour photographs are unavailable. Paradoxically, since the increased use of colour plates in these volumes, the lists have tended to disappear, the last appearing in 1998 (Altenmüller 1998, 262–266).

The best examples provide a comprehensive list of all identifiable polychrome signs in the inscriptions of a particular monument, referenced by Gardiner's group and sign numbers together with a printed hieroglyph. There then follows a description, which sets out the use of colour for the different parts of the sign in question. For example: 'G 29' (the ba bird) 'beak and legs red, head and wing blue, red outlines' (Moussa and Altenmüller 1971, 46). Even in this case, where no colour plates accompany the list, the description is sufficiently detailed to allow for comparison with other samples of the same sign.

In some cases, there is an indication of the exact colours observed (*e.g.* Brack and Brack 1980, 93). These are recorded as Munsell Codes – a convention that allows one to reproduce the same colour as that identified by the epigraphist. These chromatic shades (originally appearing in Munsell Corporation 1976) are now available through several freeware online applications (*e.g.* http://www.vcsconsulting.co.uk/VirtualAtlas.htm). However, the accuracy of computer-generated shades is largely dependent on the quality of the viewing equipment. The arrival, in recent years, of electronic colorimeters with their consistent light source has reduced much of the inherent subjectivity attached to such observations, but their use still creates problems (for the advantages and disadvantages of the two methods, see Strudwick 1991).

Colour photographs

Despite the problems of lighting, processing, and reproduction of coloured photographs, the quality is generally sufficient to distinguish the basic colours used by the ancient artist. Only in cases where degradation through chemical processes or through physical damage has diminished the legibility of the colours, have comparisons been made with other undamaged signs, in order to confirm the interpretation.

Visual examination

The most confident recording of samples has been from personal examination of inscriptions. The difficulty of working in Egypt today has meant that only museum artefacts have been studied de visu. I have personally photographed certain works, whereas for others, high-quality digital images have been obtained from the relevant museum authorities.

Locality

In order to detect any regional variation, the samples were taken from the widest possible range of localities. However, the vast majority of inscriptions come from either Thebes or the Memphite region. Therefore, apart from a comparison between these two localities, a broad topological study will have to wait for more sample monuments that originate from elsewhere.

Period

It was decided that a diachronic approach was necessary in order to establish a canon with its contingent evolution. In the case of substantial variation, this would allow dating of inscriptions according to colour conventions. Monuments are recorded as dating from a particular dynasty, but individual reigns are added to the notes wherever considered relevant (*e.g.* during the 18th and 19th dynasty, which were marked by some stylistic changes). Rather than complicating the structure of the database by adding a many-to-many relationship between monuments and periods, it was decided that a physical monument with inscriptions dating from several periods (*e.g.* Karnak temple) should be defined as separate monuments.

Occurrence

Occurrences are in fact samples of individual hieroglyphs, taken from a particular monument. They are identified by a monument number and Gardiner sign reference. Each sign is described from a colour perspective. A fixed set of basic colours is then assigned to the sample, enabling queries that access individual signs according to a particular colour. Any significant variants are treated as separate occurrences but duplicates are not recorded. Context is recorded in any situation where the sign presents an obvious anomaly from the canon or from the majority of occurrences from that particular monument. If available, a colour image is inserted in the record.

Colour

One of the major decisions to be taken before commencing the recording of samples was whether to record just the basic colours or to consider different shades as distinct and relevant to the study. After the examination of several sample texts, it became clear that, even if the shades differ from one monument to another, the intention of the ancient artists was to decorate the signs using symbolic colour tones. Pastoureau, the French colour semiotician, albeit in a different historical context (twelfth century Christian liturgical polychromy), sums up the problem:

> Liturgical colours exist only in limited number … They represent pure categories. They are abstract, conceptual colours, whose shades are of no importance ... For example, Pentecostal red can be represented on liturgical vestments by shades of vermillion, carmine, purple, pink, or orange, this is neither important nor of any significance. It is an archetypal red, the symbol of all reds (2012, 247; author’s translation).

A fixed list of basic colours was defined: black, white, red, yellow, brown, green, blue, and ‘grue’, used where green and blue are indistinguishable. This was in order to avoid subjective interpretations, such as ‘pale ochre’ or ‘sky blue’. Although of course these shades exist, they have no relevance to the strict recording process. The fixed list of basic colours from which the user can select allows queries to be written with ease. That is why the two fields ‘colour description’ (red, blue, black, *etc.*) and ‘colour use’ (beak and legs red, wing blue, eye black, *etc.*) are present in the Occurrence table.

SAMPLE IMAGE

The coloured sample images in the database are produced by first scanning a coloured plate from a published work, or by taking a digital photograph of an inscription. Then, an individual hieroglyph is selected from the displayed image with an OCR (Optical Character Recognition) application (ABBYY Screenshot Reader, http://www.abbyy.com/), and is cut and pasted into the Occurrence table. The results are variable, depending largely on the quality of the original reproduction.

A proposal for an online collaborative database of polychrome hieroglyphs

Benefits

I believe that an extended corpus, encompassing as many sites, periods, and monument types as possible, can be beneficial to all palaeographers and epigraphists, as well as to those interested in colour symbolism and cognitive categorisation. As was mentioned above, the current corpus is at present limited by my own ability to examine inscriptions in situ or to obtain free access to photographic archives. The contributions of others to this corpus would therefore be of immense value.

Current development

Several improvements to the functionality of the application are currently under development:

SHAPE OF SIGNS

The shape of a hieroglyph will be added to the Sign table. This will allow queries such as selecting all occurrences of signs, where shape = small and round. Combined with the colour, this could prove to be of great help in the identification of partially destroyed signs, where traces of colour remain visible.

MULTIPLE SELECTION

Complex multiple selection queries are currently being programmed. These will enable users to select occurrences from particular periods, locations, monument types, *etc.*

EXEMPLAR TABLE

A new table named Exemplar will contain links to occurrences that are deemed prime examples and will provide the basis for a canonical list. This will facilitate modification of the canon, when a new occurrence provides a better exemplar. The canon will therefore always be up to date.

Database conversion and migration to the web

The ideal application should be made accessible via the internet. An entirely web-based application ensures cross-platform compatibility. I propose to convert the Access database and application into a web-based application using MySQL, PHP, and HTML. MS Access does produce web-compatible forms (albeit somewhat restricted in design), but hosting requires additional software, a feature not currently supported at my preferred location, where a complete development and production platform for MySQL is available. MySQL also possesses robust security procedures, which enable the granting of privileges (read, add, update, delete) to different users for different sections of the database. Thus, individuals can be made entirely responsible for the maintenance of their own data.

Conclusion

Database technology provides a powerful tool for recording, collating, and analysing individual polychrome hieroglyphs. When deployed online, it can also provide a cheap alternative to traditional printed matter. Its ability to provide a rapid overview of a sign's colour characteristics can contribute to our understanding of Egyptian cognitive categorisation. It also has the potential to assist palaeographers in the identification of some of the more obscure hieroglyphs and in the reassignment of others.

Colour has been largely ignored in epigraphic publications. Yet for ancient Egyptians, the symbolic use of polychrome hieroglyphs appears to have been an integral component of their traditional writing system. The perennity and consistency of the canon are proof of the importance of this meta-code. I believe that it is time to recognise polychromy as a worthy object of palaeographic research.

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21

The Distribution and Dating of Egyptian False Doors and Funerary Stelae of the First Intermediate Period: A Preliminary Analysis

Melanie Pitkin

Introduction

The false door, later replaced by the stele, can be traced in the archaeological record from the end of the Old Kingdom to the beginning of the Middle Kingdom. It can be found throughout sites in Upper and Lower Egypt and across each of the major phases of rule, from the Memphites to the Herakleopolitans and the Thebans. However, studies to date have only considered the false door and stele within the parameters of individual sites or localised regions, for example: Dunham and Brovarski's studies at Naga ed-Deir (Brovarski 1989; Dunham 1937), Daoud's study at Memphis (2005) and Fischer's studies at Dendera (1968). There has been little attempt to date false doors and stelae across both time and place. To do so might make it possible to determine a benchmark for dating other events and material culture of the First Intermediate Period, as well as clearer patterns in artistic, administrative, and social changes. The purpose of this paper, therefore, is twofold: (1) to present the preliminary findings from a site distribution of 562 Egyptian false doors and funerary stelae currently known from the First Intermediate Period (reigns of King Pepy II–Mentuhotep II) and (2) to explore the results of a set of dating criteria applied to a representative group of 'well-dated' examples.

Background

The First Intermediate Period is problematic. We remain relatively uninformed of the exact nature and order of particular historical events, the whereabouts of the Herakleopolitan capital and the identification of dynasties of kings. But perhaps the pinnacle of all this ambiguity lies in its chronology. Just how long did the First Intermediate Period last?

While many of these larger questions are far from being answered, there is still much in the way that can be learned from a holistic study of false doors and stelae belonging to both royal and non-royal people. Four groupings of false door and stelae types have been identified here for examination. They include (Figs 21.1–21.4): (1) the traditional false door type which emerged out of the palace-façade decoration of the Early Dynastic Period; (2) the stèle maison or 'house stele' (Fischer 1954, 30; Jéquier 1983, 112–115), a rare type of small, squat stone edifice with

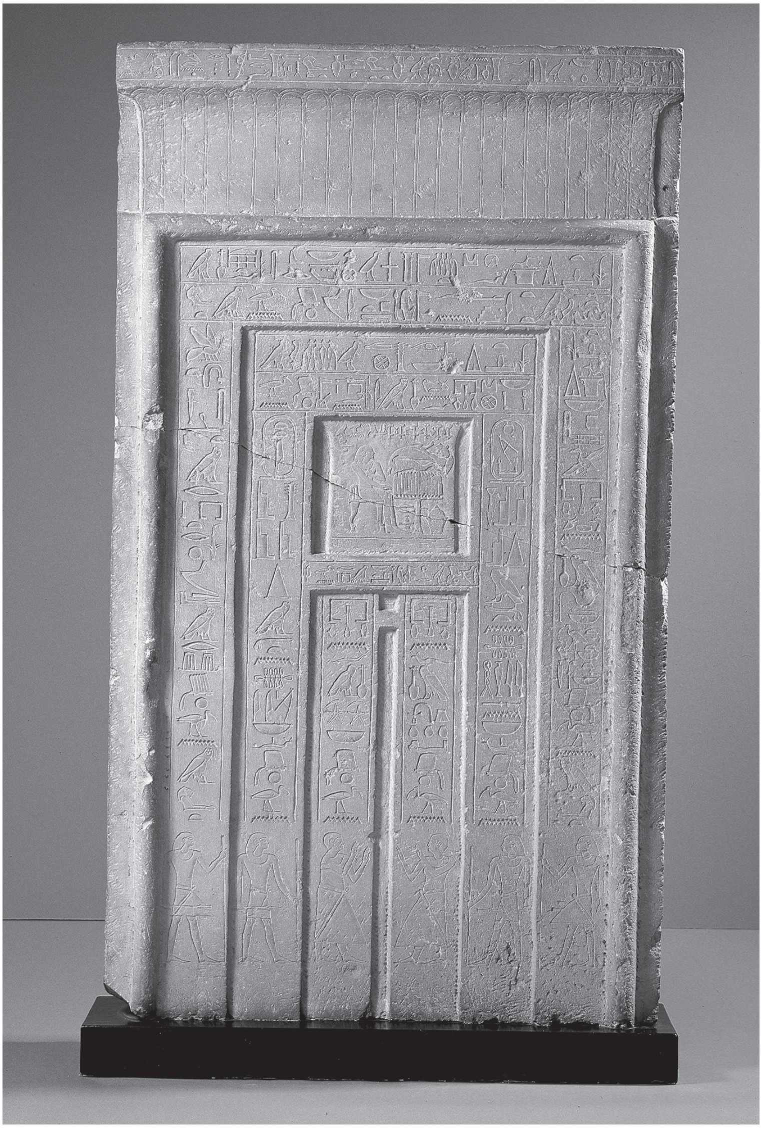


Figure 21.1. False door of gmnj-m-hAt from Saqqara, 1616, image courtesy of the Carlsberg Glyptotek, Copenhagen.

miniature false door carved on at least one side; (3) the stele, a flat stone slab which, unlike the false door, lacks the presence of any alternating panels or niches and; (4) the hybrid false door-stele, which was very similar in many respects to the type 3 stele, but also incorporating composite elements of the false door, such as the cavetto cornice and torus moulding, the central niche, drum, *wedjat*-eyes and door bolts. These elements are rendered often, but not always, without any differentiation of planes.

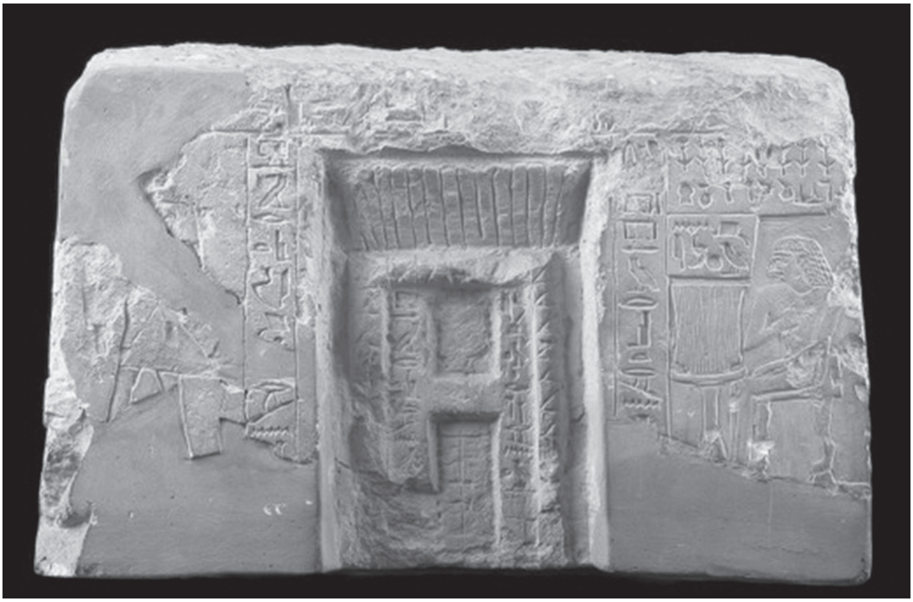


Figure 21.2. Stèle maison of Xnw from South Saqqara, E6303, image courtesy of the Cinquantenaire Museum, Brussels.

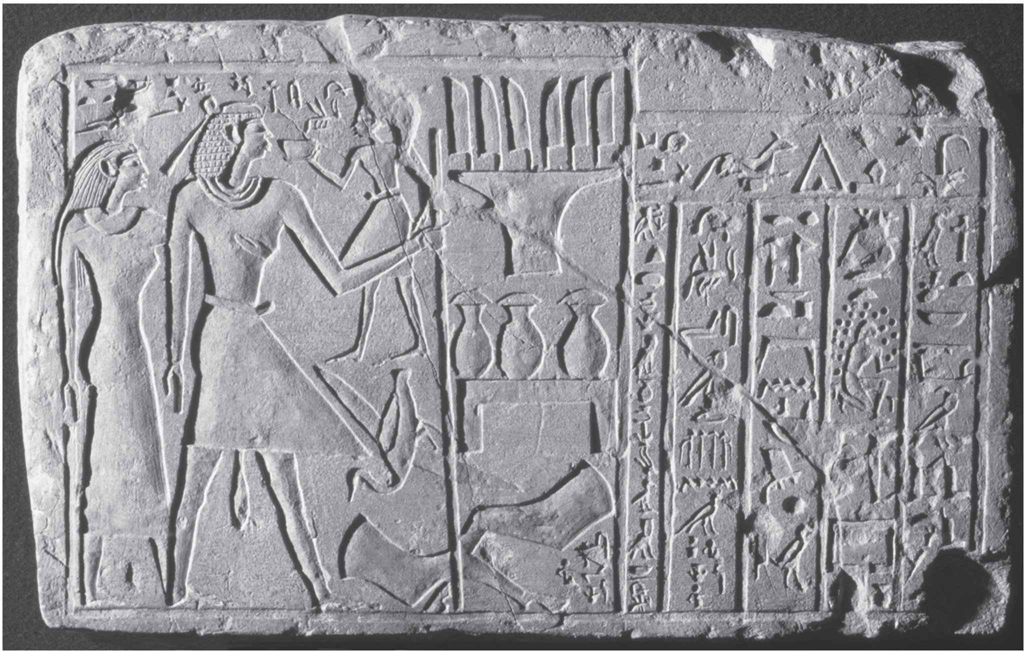


Figure 21.3. Stele of Hqr-jb from Gebelein, 5633(=1), State Hermitage Museum, St Petersburg.

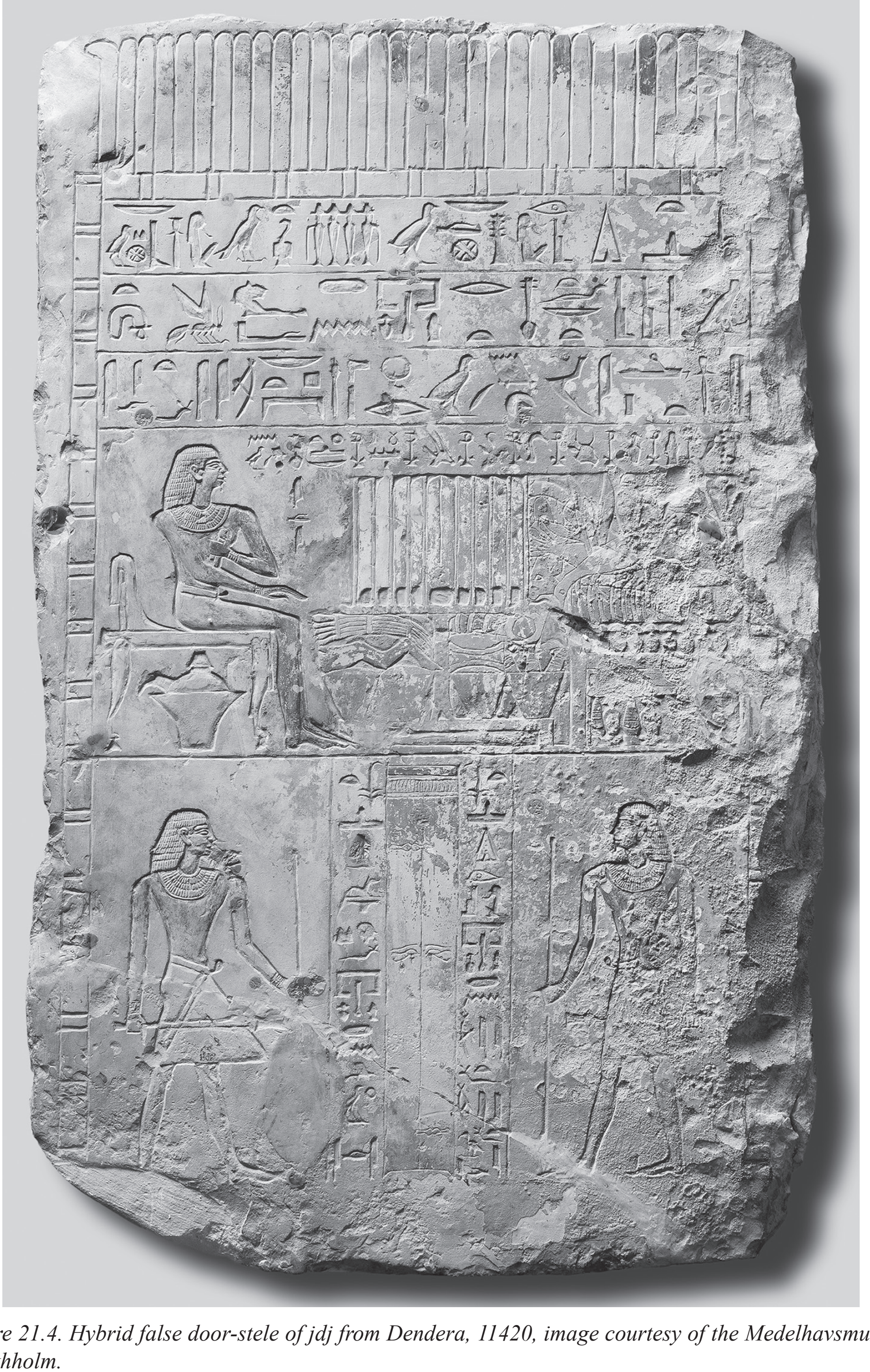


Figure 21.4. Hybrid false door-stele of jdj from Dendera, 11420, image courtesy of the Medelhavsmuseet, Stockhholm.

Arrangement of the material

The first step in the study was to try and arrange the data set of 562 false doors and stelae into some sort of manageable form, based on their existing dates. However, given there is no commonly agreed underlying chronology for the First Intermediate Period – for example, what one scholar calls the 'late Old Kingdom' or the '8th dynasty' might be another scholar's 'early First Intermediate Period' – it was a challenge trying to streamline everything without facing these conflicts. After experimenting with an approach of 'well-dated', 'relatively dated' and 'undated', which actually yielded very little in the way of useful information and provided little flexibility for analysis, it was decided to establish some dynastic groupings reflective of the key political, social and cultural phases of the First Intermediate Period. These appear as follows:

Category 1:	To the end of the 6th dynasty (Pepy II's reign)
Category 2:	The 7th–8th dynasties (period of quick succession of rulers, according to Manetho (Waddell 1940, 57–65))
Category 3:	9th– early 11th dynasties (Herakleopolitan period and pre-unification Thebes)
Category 4:	11th dynasty (unification) and thereafter (central rule of the country from Thebes)
Category 5:	Unknown (everything which does not fit into categories 1–4, including generalisations such as 'First Intermediate Period' and dynastic dates that straddle multiple categories, *e.g.* 8th–9th dynasties)

It is recognised here that the above categories are not necessarily ideal, particularly given the extensive work done by Dunham (1937), among others, who may have only reached a conclusion of 'Early, Middle or Late First Intermediate Period' in date. However, this ordering of the material can provide us with a useful starting point to help try and identify any outstanding and representative trends and patterns nationally.

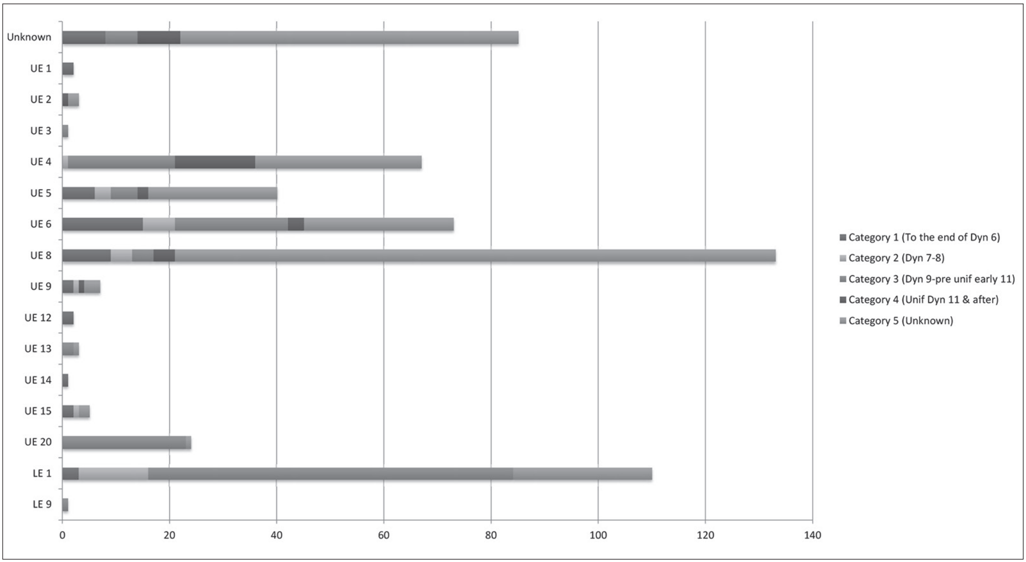
Frequency and distribution

Table 21.1 shows the spread of all 562 false doors and stelae by nome site. The quantity of material is denoted along the bottom, the nome site appears along the top left hand side and the date category is represented by the different shades of black and white.

Of interest here is the high proportion of 'undated' material (Category 5), especially from the Thinite nome (UE 8), the Memphite nome (LE 1) and those without any provenance. There is a high concentration of material in Upper Egypt from nomes 4–8 (that is, the cemetery sites of Thebes, Coptos, Dendera, Abydos and Naga ed-Deir), a conspicuously low representation of material from Middle Egypt, particularly around the important site in First Intermediate Period history of Asyuit (UE 13) (which can probably be attributed to the lack of comprehensive archaeological excavation work undertaken in this area), and a high concentration of material from Memphis (LE 1), especially during the period from the 9th dynasty – 11th dynasty (pre-unification). Furthermore, material from Busiris (LE 9) is poorly represented, which is significant given the frequency with which Osiris was invoked at Busiris in the *Htp dj nswt* offering formula (Fischer 1976, 5–24).

Figure 21.5 utilises the same data illustrated in Table 21.1, but distinguishes the different types of object (that is, the false door, stèle maison, stele and hybrid false door-stele). Of most interest here is that false doors (Fig. 21.6) continue to appear in both Upper and Lower Egypt

Table 21.1. Chart showing the quantity of false doors and stelae by nome site and existing date.



throughout all phases of the First Intermediate Period. However, we can see that they are much less populous in Upper Egypt and almost fade out altogether after the Herakleopolitan Period. Stèle maison (Fig. 21.5) are only found in Memphis, and specifically in the Teti and Pepy II pyramid cemeteries. They are also very rare, with only 6 examples known here. Hybrid false door-stelae (Fig. 21.5) are only found between Upper Egyptian nomes 4 and 8. They are also quite rare with only 28 examples (including 6 of unknown provenance) attested in this preliminary study. Not surprisingly, there is also a very low representation of stelae (Fig. 21.7) in Lower and Middle Egypt. The majority is concentrated around Upper Egyptian nomes 4–8, especially in the Thinite nome.

It was anticipated that this particular distribution might help to prove the hypothesis that perhaps some sort of linear transition occurred from the false door form to the stèle maison, hybrid false door-stele and then the cheaper and simpler slab stele form. Even if not a linear transition, perhaps the quantity of the material from each nome site would highlight trends in their popularity to indicate when one form became more preferred to another.

As illustrated in Figure 21.5, it is quite clear that false doors were a Memphite phenomenon that found popularity amongst the Herakleopolitans in northern Upper Egypt. The stelae, and hybrid false door-stelae, were a phenomenon in Upper Egypt between Thebes and Akhmim, while stèle maison were a short-lived, site specific and experimental form from Memphis; a more recent study conducted on the hybrid false door-stelae by the present author would also show this to be an experimental form, perhaps originally derived from the Memphite stèle maison, which entered Upper Egypt via Abydos (Pitkin 2014).

A study was then undertaken into the shape of the stele to see if this might assist in the dating process. Could it be that a vertically shaped stele retains an earlier date because it is closest in form to the Memphite style false doors? If that holds true, then maybe a square stele succeeded

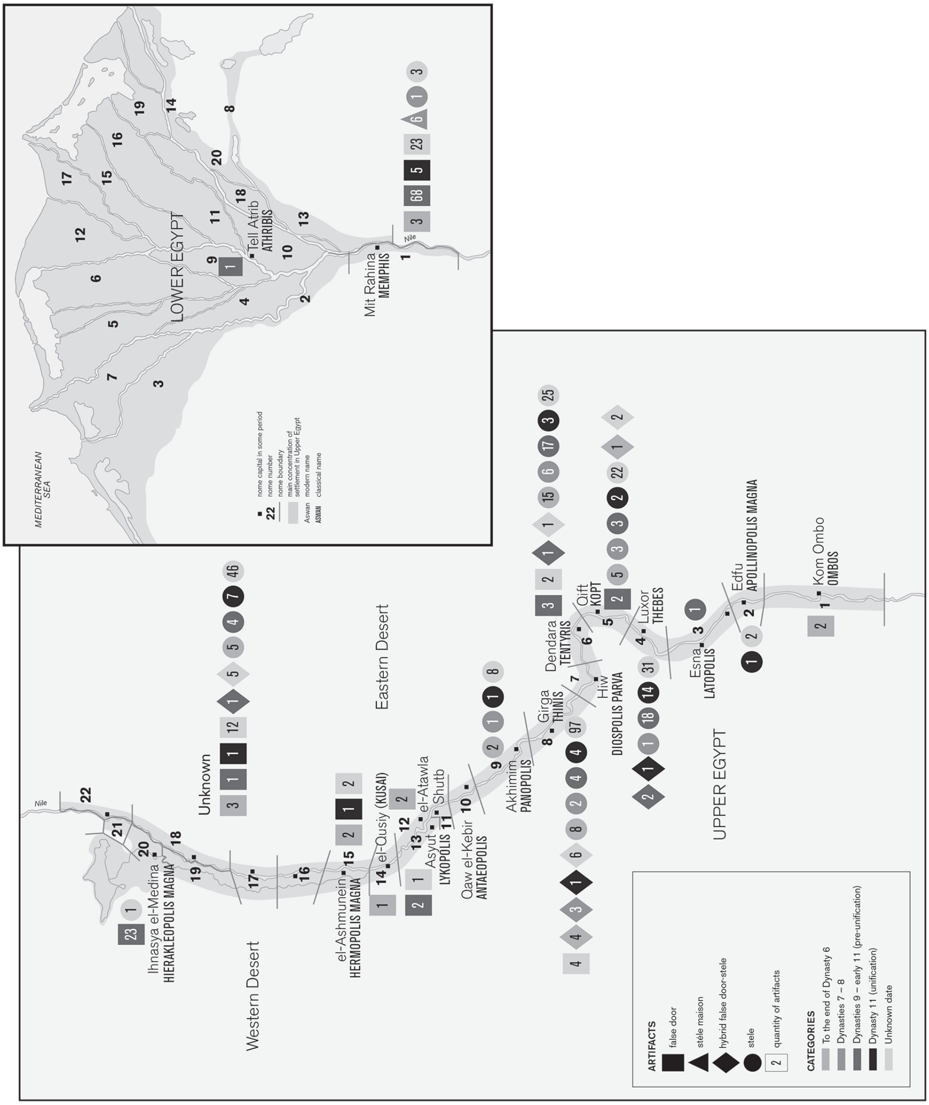
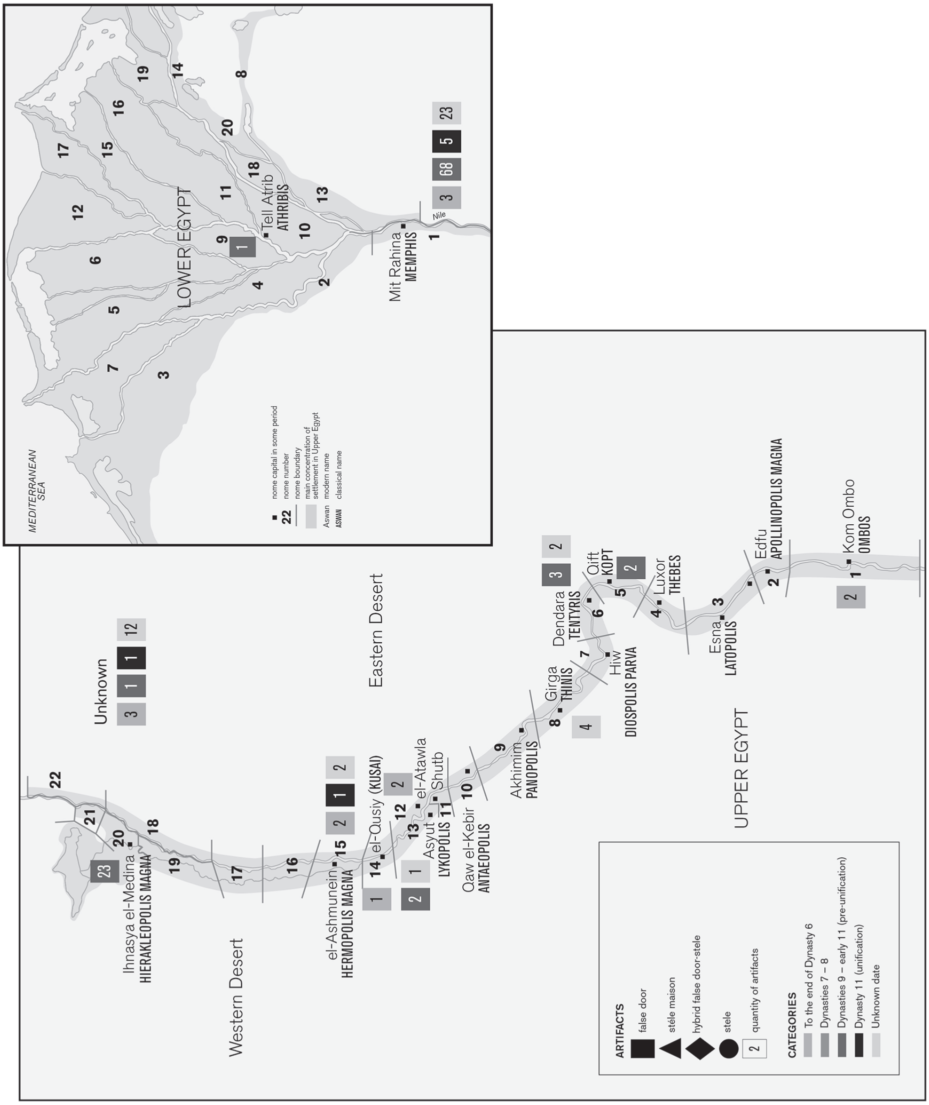

MEDITERRANEAN SEA
LOWER EGYPT
Tell Atrib
ATHRIBIS
Mit Rahina
MEMPHIS
Nile
nome capital in some period
nome number
nome boundary
main concentration of settlement in Upper Egypt
Aswan modern name
ASWAN classical name
Ihnasya el-Medina
HERAKLEOPOLIS MAGNA
Western Desert
Eastern Desert
Unknown
el-Ashmunein
HERMOPOLIS MAGNA
el-Qusiy (KUSAI)
el-Atawla
Asyut
Shutb
LYKOPOLIS
Qaw el-Kebir
ANTAEOPOLIS
Akhmim
PANOPOLIS
Girga
THINIS
Dendara
TENTYRIS
Hiw
DIOSPOLIS PARVA
Qift
KOPT
Luxor
THEBES
Esna
LATOPOLIS
Edfu
APOLLINOPOLIS MAGNA
Kom Ombo
OMBOS
UPPER EGYPT
ARTIFACTS
■ false door
▲ stèle maison
◆ hybrid false door-stele
● stele
2 quantity of artifacts
CATEGORIES
To the end of Dynasty 6
Dynasties 7 – 8
Dynasties 9 – early 11 (pre-unification)
Dynasty 11 (unification)
Unknown date

Figure 21.5. Map showing the entire distribution of the corpus by nome site.


MEDITERRANEAN SEA
LOWER EGYPT
Tell Atrib
ATHRIBIS
Mit Rahina
MEMPHIS
Nile
1
2
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8
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10
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16
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18
19
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3
68
5
23
1
■ nome capital in some period
22 nome number
nome boundary
main concentration of settlement in Upper Egypt
Aswan modern name
ASWAN classical name
Unknown
3
1
1
12
Eastern Desert
Western Desert
Ihnasya el-Medina
HIERAKLEOPOLIS MAGNA
23
el-Ashmunein
HERMOPOLIS MAGNA
el-Qusiy (KUSAI)
el-Atawla
Shutb
Asyut
LYKOPOLIS
Qaw el-Kebir
ANTAEOPOLIS
Akhmim
PANOPOLIS
Girga
THINIS
Hiw
DIOSPOLIS PARVA
Dendara
TENTYRIS
Qift
KOPT
Luxor
THEBES
Esna
LATOPOLIS
Edfu
APOLLINOPOLIS MAGNA
Kom Ombo
OMBOS
UPPER EGYPT
1
2
4
3
6
7
8
9
10
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12
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21
22
2
1
2
1
2
1
2
2
4
3
2
2
2
ARTIFACTS
false door
stèle maison
hybrid false door-stele
stele
2 quantity of artifacts
CATEGORIES
To the end of Dynasty 6
Dynasties 7 – 8
Dynasties 9 – early 11 (pre-unification)
Dynasty 11 (unification)
Unknown date

Figure 21.6. Map showing the entire distribution of false doors by nome site.

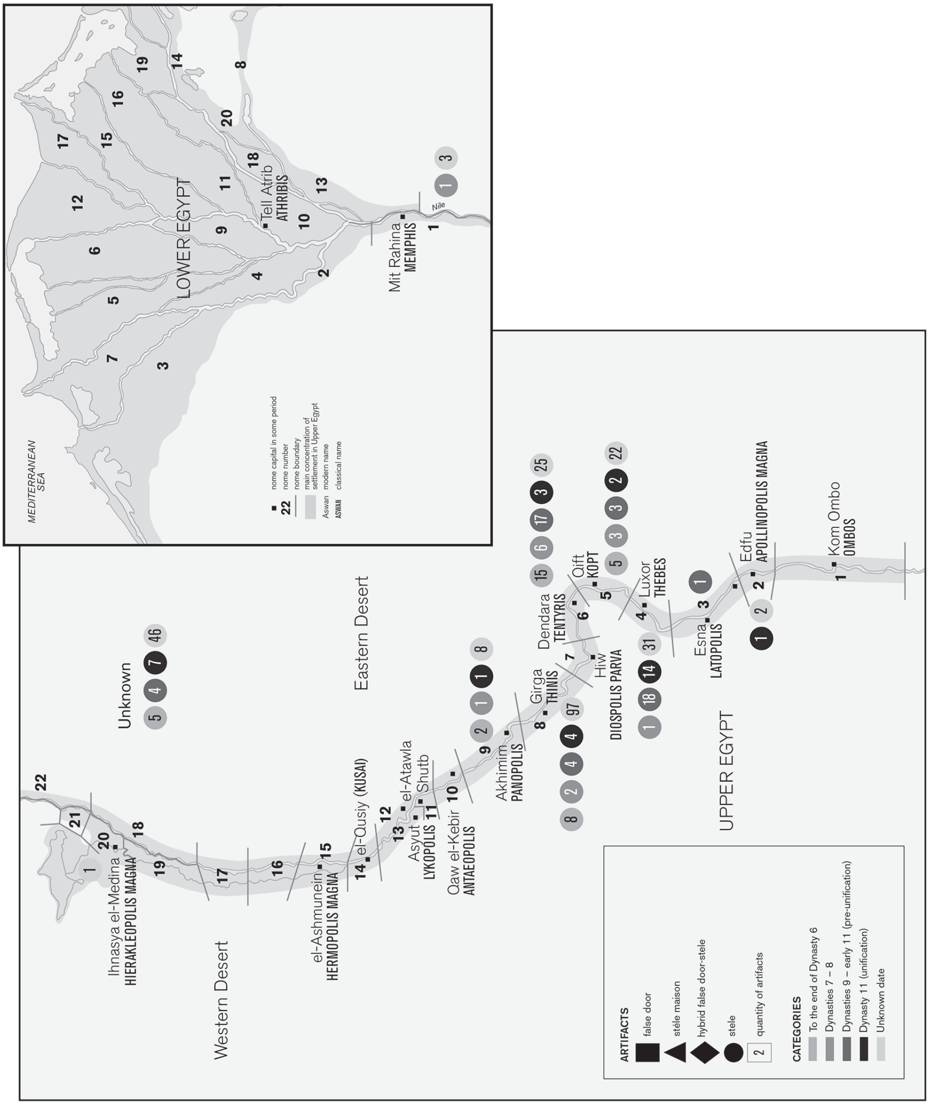

MEDITERRANEAN SEA
LOWER EGYPT
Tell Atrib
ATHRIBIS
Mit Rahina
MEMPHIS
Nile
nome capital in some period
nome number
nome boundary
main concentration of settlement in Upper Egypt
Aswan modern name
ASWAN classical name
Unknown
Eastern Desert
Western Desert
UPPER EGYPT
Ihnasya el-Medina
HIERAKLEOPOLIS MAGNA
el-Ashmunein
HERMOPOLIS MAGNA
el-Qusiy (KUSAI)
el-Atawla
Shutb
Asyut
LYKOPOLIS
Qaw el-Kebir
ANTAEOPOLIS
Akhmim
PANOPOLIS
Girga
THINIS
Hiw
DIOSPOLIS PARVA
Dendara
TENTYRIS
Qift
KOPT
Luxor
THEBES
Esna
LATOPOLIS
Edfu
APOLLINOPOLIS MAGNA
Kom Ombo
OMBOS
ARTIFACTS
false door
stéle maison
hybrid false door-stele
stele
quantity of artifacts
CATEGORIES
To the end of Dynasty 6
Dynasties 7 – 8
Dynasties 9 – early 11 (pre-unification)
Dynasty 11 (unification)
Unknown date

Figure 21.7. Map showing the entire distribution of stelae by nome site.

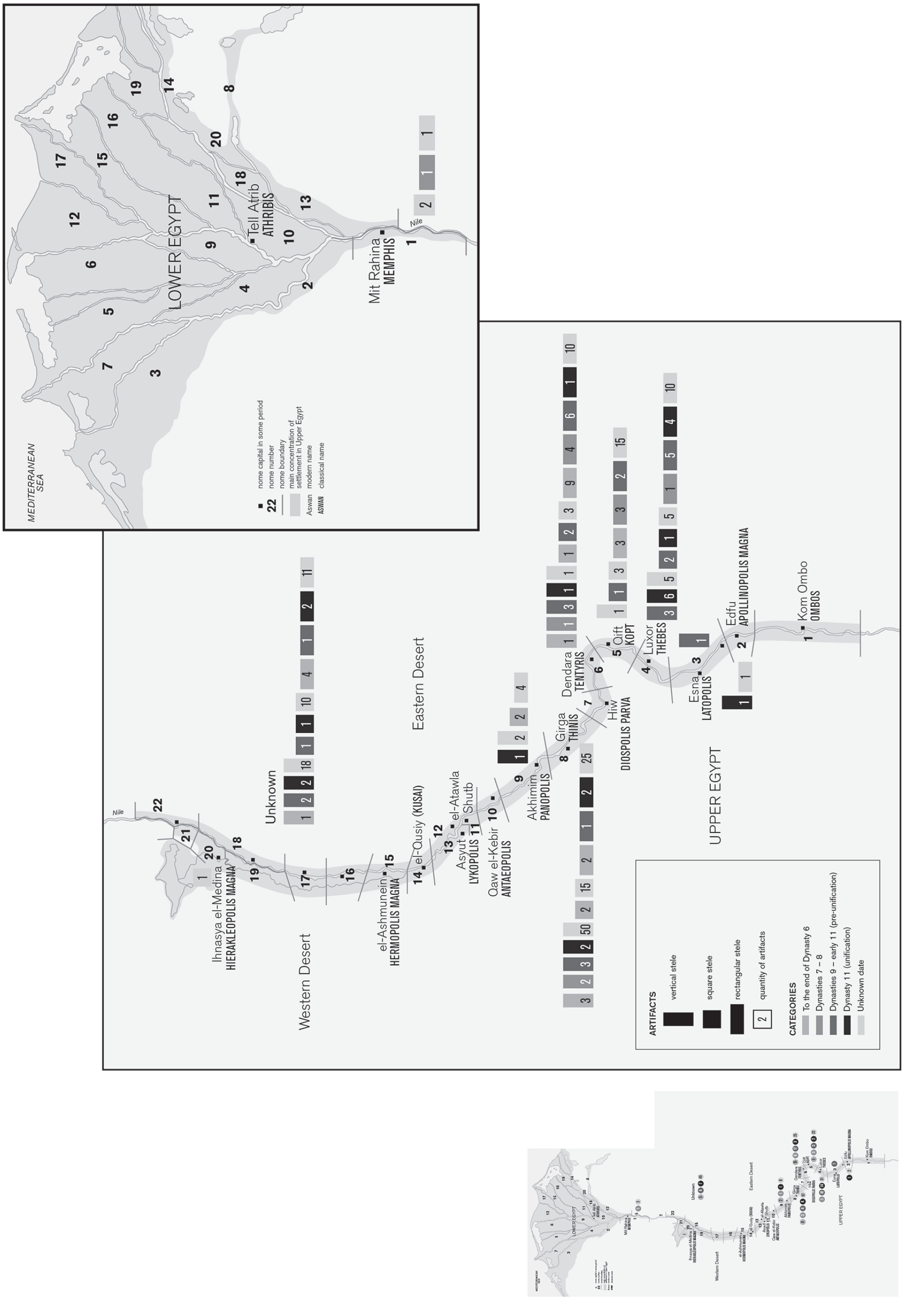

MEDITERRANEAN SEA
LOWER EGYPT
Tell Atrib
ATHRIBIS
Mit Rahina
MEMPHIS
Nile
nome capital in some period
nome number
nome boundary
main concentration of settlement in Upper Egypt
Aswan modern name
ASWAN classical name
Ihnasya el-Medina
HIERAKLEOPOLIS MAGNA
Western Desert
el-Ashmunein
HERMOPOLIS MAGNA
el-Qusiy (KUSAI)
el-Atawla
Asyut
LYKOPOLIS
Shutb
Qaw el-Kebir
ANTAEOPOLIS
Akhmim
PANOPOLIS
Girga
THINIS
Dendara
TENTYRIS
Hiw
DIOSPOLIS PARVA
Qift
KOPT
Luxor
THEBES
Esna
LATOPOLIS
Edfu
APOLLINOPOLIS MAGNA
Kom Ombo
OMBOS
Unknown
Eastern Desert
UPPER EGYPT
ARTIFACTS
vertical stele
square stele
rectangular stele
quantity of artifacts
CATEGORIES
To the end of Dynasty 6
Dynasties 7 – 8
Dynasties 9 – early 11 (pre-unification)
Dynasty 11 (unification)
Unknown date

Figure 21.8. Map showing the entire distribution of vertical, square and horizontal stelae by nome site.

this, followed by the rectangular stele. As the rectangular stele is the furthest away in form to the original false door, then maybe this would retain the latest date. The results, however, would suggest something quite different.

What the distribution of the data actually revealed is that there does not appear to be a preferred stele shape at any particular time during the First Intermediate Period which points to this suggested sequence of development (Fig. 21.8). There is a fairly even spread of vertical, square, and rectangular stelae and they can be found across all of the date categories. However, we can see that most variation in the shape of the stele occurs within the 8th Upper Egyptian Thinite nome. Vertical, square and rectangular shaped stelae are more populous here than at any other site. It is also clear that, with the exception of our undated material, rectangular shaped stelae actually appear more frequently earlier on – to the end of the 8th dynasty – while vertical shaped stelae are more frequent later on, from the 11th dynasty – unification and thereafter – which is the opposite of the hypothesis under consideration here.

'Well-dated' group of false doors and stelae

It is necessary to exercise a high degree of caution when it comes to dating any type of object or inscription from the First Intermediate Period. This is because we do not have a commonly agreed underlying chronology, there are contradictions in the ancient literature and there is an overall lack of evidence in terms of monuments, royal inscriptions, and objects found *in situ* in well-dated tombs.

Out of the 562 false doors and stelae being examined as part of this preliminary study, 81 have been identified here that can be dated with some certainty to one of four major cultural, stylistic and administrative phases or 'styles' of First Intermediate Period history. These major phases, and the rationale for assigning a 'well-dated' status to these, appear as follows:

The Memphite style (to the end of the 8th dynasty)

This consists of any false door or funerary stele in the present corpus, bearing either:

- A cartouche of Pepy in the owner's name
- A funerary cult title of Pepy or Neferkare and/or,
- A secure archaeological context (specifically for Jéquier's excavated group of stèle maison from the Pepy II pyramid cemetery at South Saqqara) (1983, 112–115).

It is recognised here that this criteria is by no means absolute. For example, the presence of a cartouche of Pepy could refer to either Pepy I or Pepy II and, with regards to the funerary cult titles, it is possible that a funerary cult of the king was maintained long after that particular king was in power. What this grouping does tell us is that these false doors and stelae cannot date any earlier than the reign of Pepy (either I or II). It is also the firmest ground we have to work on when trying to determine any apparent points of transition in false doors and stelae from the 'Old Kingdom' to the 'First Intermediate Period', which may be manifested through the introduction and phasing out of particular iconographic and paleographic features.

The Herakleopolitan style (9th–10th dynasties)

This consists of any false door or funerary stele in the present corpus, bearing either:

- A funerary cult title of Merikare
- A reference to the 'House of Khety'
- Khety in the owner's name (a name more popular during Herakleopolitan rule, but which was by no means exclusive to this time)
- Genealogy and its relationship to the Gebel Tjauti inscriptions in the Theban Western Desert (Darnell 1997)
- A reference to historical events.

The Pre-Unification Theban style (early 11th dynasty)

This consists of any false door or funerary stele in the present corpus, bearing either:

- A cartouche of Wahankh Intef II
- Intef in the owner's name (like Khety, this name was more popular during Theban rule, but also had a lifespan beyond this)

The Post-Unification Theban style (mid 11th dynasty)

This consists of any false door or funerary stele in the present corpus, bearing either:

- A cartouche of Nebhepetre Mentuhotep II
- A reference to the House of Montu
- Montu in the owner's name (again, more frequently associated with the Mentuhotep rulers, but not exclusively so).

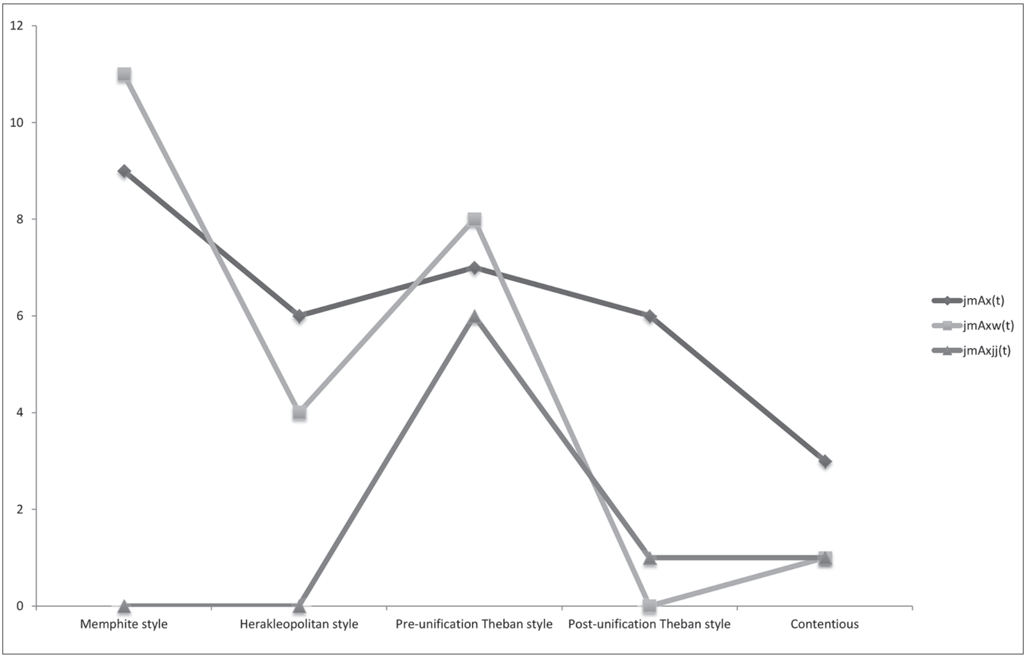
To accommodate those false doors and stelae, which exhibit multiple criteria from the aforementioned dating phases, it was also deemed necessary to devise a fifth category called 'Contentious'. To illustrate this case in point is stele Turin 1278 (Fischer 1964, 86–87, pl. xxviii). The owner is a man named Intef (a criterion for the pre-unification Theban style), yet he also bears the cartouche of Pepy in the phrase *pr.t xr.w t Hnqt pAt Hwt-kA ppjj* 'May invocation offerings of the *ka*-chapel of Pepy go forth' and he holds a converted bow and sheaf of arrows, which might, in fact, point to a date closer in time to the Herakleopolitan Period.

The purpose of these groupings is to firstly provide us with a relative chronology, or starting point, for which an overall dating typology can be established. The intention here is to apply over 200 different types of iconographic and paleographic dating criteria to these 88 'well-dated' objects to see if a more precise chronological sequence can be determined. It is within this part of the study that the author also hopes to be able to identify regional variations and possibly the way they 'travelled' between nomes (or remained entirely local). It is hoped this type of observation might even lend itself to determining a timeframe of Theban and Herakleopolitan interactions and if these ruling parties were ever coeval.

Dating criteria

A sample of five dating criteria has been applied here to demonstrate how the abovementioned research methodology is an effective one.

Table 21.2. Table showing the distribution (by date) and frequency of the writing of jmAx(t), jmAxw(t) and jmAxjj(t).



Writing of the 'revered one' as jmAx(t), jmAxw(t) or jmAxjj(t) (Table 21.2)

- The abbreviated writing of *jmAx(t)* (as just the spinal cord and placenta with or without the filling stroke occurs on false doors and stelae throughout all phases of the First Intermediate Period).
- The writing of *jmAxw(t)* with the quail bird ceases at the end of the 11th dynasty, pre-unification.
- While the sound change to *jmAxjj(t)* does not occur on false doors and stelae until the period of the 11th dynasty, pre-unification. It is also a trend that continues, although with less frequency in this sample, into the post-unification phase of the 11th dynasty and thereafter. As noted by Brovarski and others (1989, 254), however, the writing of *jmAxjj(t)* does appear on coffins earlier and, according to Schenkel (1962, 51, 59), it first appears in tomb no.4 of Khety at Asyuit during the time of Merikare.

Writing of Anubis on a Htp sign, a stand and/or with phonetic complements (Table 21.3)

- Anubis on a *Htp* sign only appears early on during the Memphite style (to the end of the 8th dynasty). It does not occur on false doors and stelae again after this.
- Anubis on a stand appears throughout all phases of the First Intermediate Period.
- Phonetic complements appear until the end of the pre-unification Theban style (early 11th dynasty), which is interesting considering that Fischer (1976, 7), among others (Brovarski 1989, 228; Daoud 2005, 180), have noted that this is typically a later feature.

Table 21.3. Table showing the distribution (by date) and frequency of the writing of Anubis on a Htp sign, a stand or with phonetic complements.

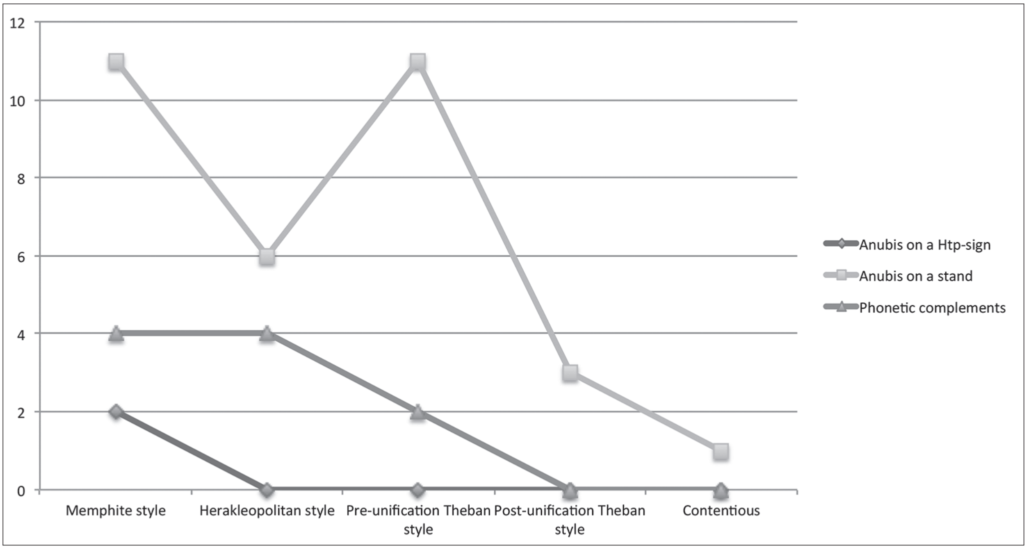
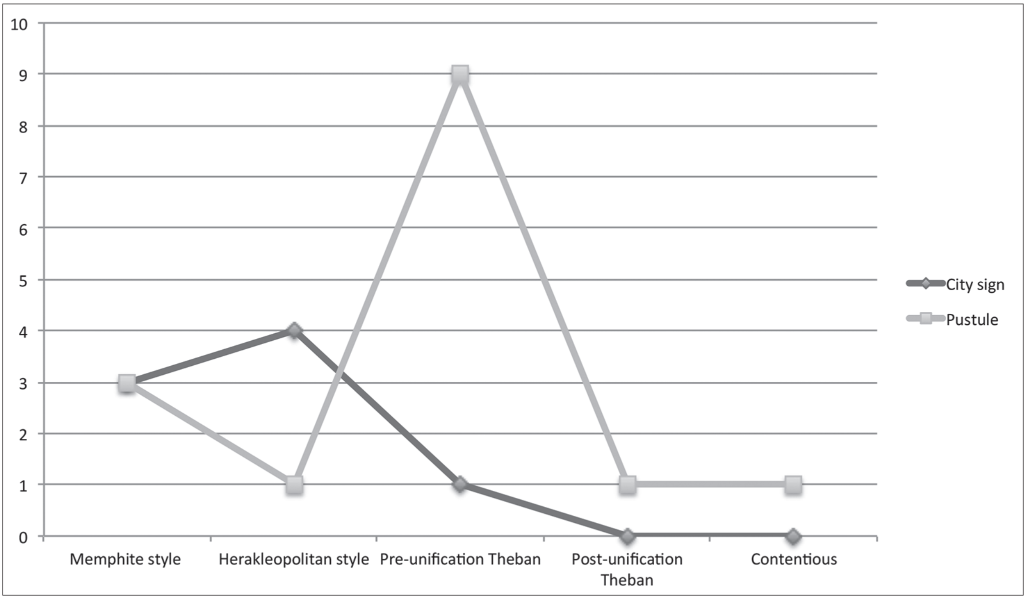


Table 21.4. Table showing the distribution (by date) and frequency of the writing of jmy wt with a city sign or pustule determinative.



Determinative for jmy wt "who is in the embalming place" (Table 21.4)

- The city sign determinative was only in use during the Memphite and Herakleopolitan phases, with one exception, while the pustule determinative became the preferred form in the pre-unification and, to a lesser extent, the post-unification phase of the 11th dynasty.

Round-topped shape of the stele

- The round-topped form of the stele is, typically, a well and long established Middle Kingdom characteristic and does not appear any earlier than the reign of Mentuhotep II.

Offerings on top of the bread loaves

- The appearance of floating offerings, such as a foreleg of beef, gourd-like vegetables, a calf's head and trussed duck above the traditional bread loaves occurs, most commonly, from the Herakleopolitan Period through to post-unification Thebes. There is also one example of this occurring in our Memphite grouping – that of *ppj-snb.j* from Naga ed-Deir.

Dating the Pushkin Museum stele

The stele of *Hnjj* from the Pushkin Museum in Moscow (Hodjash and Berlev 1982, 64–66) dates to at least the pre-unification phase of the 11th dynasty since it bears the cartouche of King Wahankh Intef II. The stele also bears a number of the aforementioned dating criteria, which can help to confirm the types of characteristics we need to be looking for when trying to identify other stelae, which date close in time to the reign of Intef II. By applying these criteria to *Hnjj*, we can see how this type of an analysis can benefit us in the dating of individual false doors and stelae.

First and foremost, the stele of *Hnjj* is rectangular, a characteristic which pre-dates the reign of Mentuhotep II. Above the offering table, containing the traditional bread loaves, is a floating

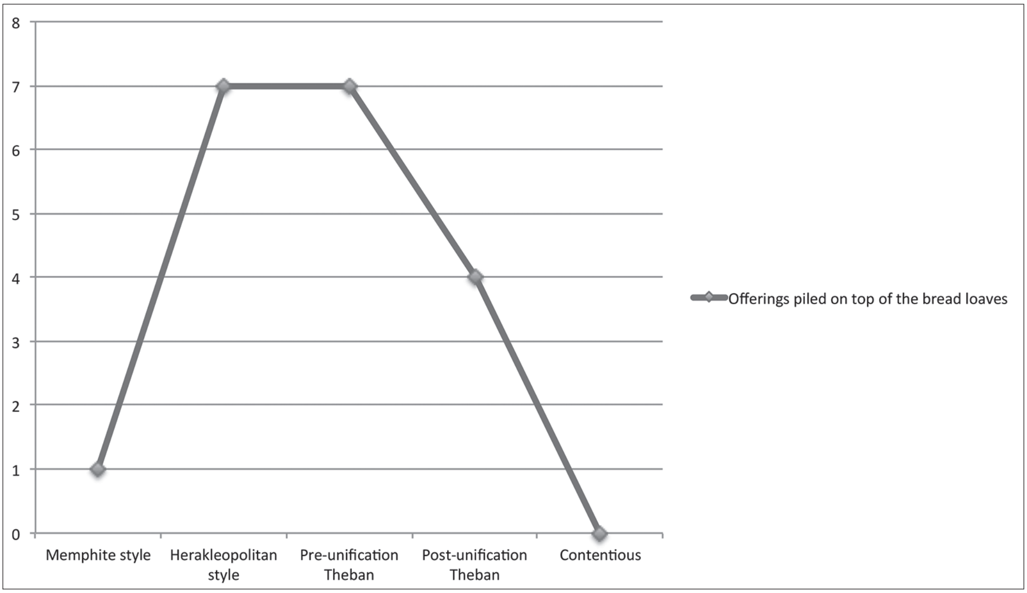


Table 21.5. Table showing the distribution (by date) and frequency of the representation of offerings above the traditional bread loaves.

trussed duck, ribs, a gazelle, calf's head and a foreleg of beef – a feature that was not commonly introduced until the Herakleopolitan Period. The writing of the 'revered one' or the 'honoured one' appears as *jmAx* and *jmAxw*, which might indicate it is the earliest of all the stelae in this group containing the cartouche of Intef II, since the writing of *jmAxjj* does not appear any earlier than this king's reign. While, the writing of *jmy wt* occurs with a pustule determinative – the preferred form from the pre-unification phase onwards.

Conclusion

It is hoped that by applying more iconographic and paleographic criteria it will be possible to continue refining the dating properties of the above mentioned 'well-dated' groupings of false doors and stelae – thereby arriving at a reliable benchmark for which all other false doors, stelae and other types of material culture from the First Intermediate Period can also be examined and dated. Even if the results do not prove quite as conclusive as this, the author hopes to have opened up a new way of looking at the First Intermediate Period through its false doors and stelae, and generated new opportunities for further scholarly research.

Notes and acknowledgements

I would like to express my sincere thanks to my PhD supervisors, Professor Naguib Kanawati, Macquarie University and Dr Nigel Strudwick, University of Memphis in the preparation of this paper. Further thanks are due to Jasmine Crea for designing the maps represented herein and to staff of the Carlsberg Glyptotek, Copenhagen, the Cinquantenaire Museum, Brussels and the Medelhavsmuseet, Stockhholm for allowing me to reproduce the images of stelae in their collections. Additional thanks must be extended to the long list of Museum staff who have either granted me access to view their First Intermediate Period false door and stelae collections and/or provided me with images and information via email.

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22

Re-excavating Heliopolis: Unpublished Archaeological Data from the Archives of Ernesto Schiaparelli and Missione Archeologica Italiana

Alice Maria Sbriglio[1] *and Federica Ugliano*[2]

Introduction

This paper presents the preliminary results of the study of unpublished archives documenting the archaeological excavations carried out at Heliopolis by Ernesto Schiaparelli and the Missione Archeologica Italiana (MAI henceforth) between 1903 and 1906. This study aims to shed light on the work and results of the Italian expedition, to this day unknown due to the lack of any previous publication. For the first time, it is possible to define which areas of the ancient site were investigated and when.

After presenting Schiaparelli and MAI, the paper focuses on the documents that allowed the reconstruction of the excavations at Heliopolis. The third part analyses, year by year, the work undertaken by the expedition, concentrating on the principal discoveries.

Ernesto Schiaparelli and MAI

Schiaparelli (1856–1928) is a key figure in the history of Italian excavations in Egypt: from 1894 to 1928 he was the director of the Egyptian Museum of Turin and the founder of MAI (Curto 1990; Donadoni Roveri 1987; Donadoni Roveri 1988; Donadoni Roveri 1990; Donadoni Roveri 1997; Moiso 2008a; Moiso 2008b).

An earlier investigation of Egyptian antiquities in Italy had revealed a problematic gap in the archaeological material, as only the central phases of ancient Egyptian history were clearly represented. The first aim of Schiaparelli was to fill this historical gap in order to elevate his museum to the level of other European collections and to reaffirm the supremacy of Italy:

> *[…] è necessario incominciare, se anche si disponga di piccoli mezzi, a provvedere all'incremento del materiale archeologico, e principalmente dalle collezioni egiziane, che rappresentano la ricchezza maggiore di questo Museo.*
>
> […] even if with limited means, it is necessary to start increasing the archaeological material, and especially the ancient Egyptian collection, which represents the actual resource of this Museum.
>
> (E. Schiaparelli to the Minister of Public Education, 15/10/1900)

In 1900–1901 Schiaparelli went to Egypt, where he purchased more than 1400 objects chosen as the most representative artefacts of ancient and late periods. They were all registered in a new inventory, commonly referred to as the ‘Inventario Manoscritto’ (Inv. Ms., *i.e.* manuscript inventory). However, without sure provenance and archaeological context for many of these artefacts, dealing with this kind of material was frequently challenging and not always rewarding. Schiaparelli decided then to create his own archaeological mission in order to have more direct access to the Egyptian antiquities (Moiso 2008b).

The decisive turn came in 1902, when Schiaparelli founded the Italian Archaeological Mission (MAI) sponsored by king Vittorio Emanuele III. In a letter dated 29th April 1902, he insisted in accepting the concession offered by the Egyptian government as an exceptional opportunity for Italy and national prestige:

> *[...] ebbi già opportunità di richiamare l’attenzione di codesto R.° Ministero della convenienza che, come tutte indistintamente le principali Nazioni Europee, anche l’Italia, assumesse in Egitto la direzione di qualche importante scavo, alle condizioni che finora sono consentite, di poter cioè dividere a metà col Museo del Cairo il prodotto dello scavo medesimo. [...] Lo scavo che, forse per l’ultima volta, ci viene proposto è di tale importanza, esso può tanto largamente contribuire alla storia dell’Egitto e all’incremento del materiale archeologico di questo Museo, che non può, io ritengo, di non essere accettato con gratitudine.*
>
> […] I have already drawn the attention of this Royal Minister to the opportunity for Italy, as for all the other European nations, to assume the direction of some excavations, at the currently agreed conditions, *i.e.* to share equally the outcome of the digs with the Cairo Museum. [...] The excavation that has been proposed to us, possibly for the last time, is so important and it can greatly contribute to the history of Egypt and increase the archaeological material of this Museum, that it cannot be accepted without endless gratitude.
>
> (E. Schiaparelli to the Minister of Public Education, 29/04/1902)

While obtaining financial support for the archaeological mission from the Minister of Public Education, together with the personal contribution of the King, Schiaparelli applied for the excavation concessions in Egypt, openly sponsored by Gaston Maspero. Following the advice of his former professor, he asked for authorisation to dig at Gizeh, Heliopolis, and the Valley of the Queens:

> *Monsieur le Professeur,*
> *J’ai l’honneur de vous informer que le Comité d’Egyptologie a accordé l’autorisation que vous avez demandé de faire des fouilles à Héliopolis (Matarieh) et dans le vallée de Reines (Thèbes).*
> *Veuillez agréer l’assurance de une considération très distinguée.*
> *Pour Héliopolis, vous avez à vous entendre avec Daminos-Pacha qui a obtenue la concession d’une parte du site.*
>
> Dear Professor,
> I am pleased to inform you that the Committee of Egyptology has authorised you to excavate the sites of Heliopolis (Matarieh) and the Valley of the Queens (Thebes).
> Best regards.
> For Heliopolis, you need to contact Daminos-Pacha, who obtained the concession for part of the site.
>
> (G. Maspero to E. Schiaparelli, 20/04/1902)

Once all the legal formalities had been fulfilled, Schiaparelli focused on the practicalities and the organisation of the excavation schedule. Assisted by Alessandro Barsanti, who was working as a conservator at the Cairo Museum and on the funerary complex of Unas (Piacentini 2011), and through the Marquis Giuseppe Salvago Raggi, the Italian diplomatic minister in Cairo, he settled his first campaign by the end of December 1902.

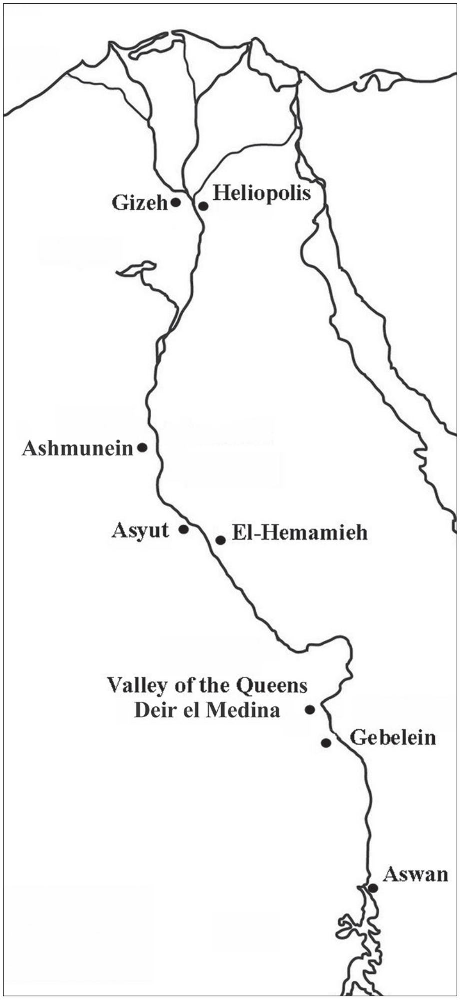

Figure 22.1. Sites excavated by the MAI (1903–1920) © F. Ugliano.

The first MAI season was then ready to start its work in Egypt, and from 1903 to 1920 Schiaparelli excavated eleven sites in the course of twelve seasons (Fig. 22.1). His attention was not devoted to the well-known and famous pharaonic sites, but rather he focused on provincial, less promising, but nonetheless strategic locations. His main purpose was to fill the gaps in the archaeological records of the Turin Museum, which mainly represented the New Kingdom and the Theban area. Moreover, in collaboration with Accademia dei Lincei, he was requested to select several areas from which to recover ancient papyri. Among the sites that Schiaparelli excavated, the following are worth mentioning: Gizeh (funerary complex of Cheops and private mastabas), the Valley of the Queens (tomb of Nefertari and royal princes), Deir el Medina (the settlement and the intact tomb of Kha and Merit), Qau el Kebir (monumental tombs of the local governors Wakha I, Ibu, and Wakha II), Hemamieh (predynastic cemetery), Asyut (the 6th–12th dynasty necropolis), Gebelein (the fortress, the temple of Hathor, the 6th–9th dynasty necropolis, and the ‘Gebelein archive’ with papyri dating back to the 4th dynasty), Ashmunein (several ancient Greek and Roman papyri, the temple of Thoth, and Tuna el Gebel necropolis).

Despite his extensive work, only two tomes (Schiaparelli 1923; 1927) were published. The originally planned series would have included six volumes:

> *A completare l’illustrazione occorrevano ancora, nel concetto dello Schiaparelli, altri sei volumi, compresi i due a me stesso affidati per la parte antropologica e psicologica.*
> *La morte ha fermato la sua mano mentre stendeva la relazione sugli scavi di Eliopoli: la mistica città del sole, culla delle originarie e purissime dottrine monoteiste egiziane [...].*
>
> According to Schiaparelli’s original plan, six more volumes were intended to be written, together with the two volumes that I was in charge of supervising, about psychology and anthropology. Death surprised his hand while he was working on the report about the excavation at Heliopolis, the mystic city of the sun, cradle of the most original and pure monotheistic Egyptian doctrines [...].
>
> (Marro 1937, 18)

Other accounts of Schiaparelli's work include manuscript inventories, notes, letters, photographs, photographic plates, and excavation diaries written by Schiaparelli himself, or plans and excavation records drawn and kept by his assistants. Since multiple excavations were usually conducted at the same time, Schiaparelli always employed several archaeologists as co-directors and supervisors of the fieldwork. Among his associates, he designated also experts from different fields: a conservator (Fabrizio Lucarini), an anthropologist (Giovanni Marro), ancient Greek and Roman historians and archaeologists (Evaristo Breccia and Giacomo Biondi), a papyrologist (Girolamo Vitelli), and an archaeologist of prehistory (Roberto Paribeni). This created one of the first multidisciplinary teams in the history of excavations in Egypt, and reveals his deep awareness of the necessity of having different abilities and knowledge at work. This kind of approach was in line with the different purposes of MAI, which focused not only on the historical and archaeological aspects, but also on the anthropological and ethnographical perspectives:

> *Merita poi di essere ricordato che la M. A. I. – unica fra tutte le Missioni le quali esplorano il suolo egiziano – oltre lo scopo archeologico e storico ha anche quello antropologico ed etnografico; essendosi essa proposto un programma di ampie ricerche sulla costituzione fisica e sulla psicologia dell'antica razza egiziana, nonchè uno studio comparativo fra la razza del tempo antico, della bassa epoca e del tempo moderno.*
>
> It is worth recalling that MAI – unlike any other archaeological mission exploring the Egyptian soil – has not only historical and archaeological interests, but also anthropological and ethnographical purposes; indeed it aims at studying the physical constitution and the psychology of the ancient Egyptian race, and investigating comparatively the ancient, the late and the modern population.
>
> (Marro 1925, 4)

Another key figure, other than those mentioned above, was Francesco Ballerini (1877–1910). He was designated as curator of the Turin Museum in 1902 and participated in the excavations at Gizeh, Heliopolis, Ashmunein, Asyut, Qau el Kebir, Deir el Medina, and Valley of the Queens (Consonni *et al.* 2010; Consonni *et al.* 2012). Ballerini was an epigrapher and a language specialist, but he also worked as excavation co-director and supervisor, and was also responsible for logistics. He drew most of the plans and kept in his diaries the digging records and information. Thanks to his private correspondence, it is possible to gain insight into the life of archaeologists in Egypt at the beginning of the 20th century (Consonni *et al.* 2012, 63–187). Schiaparelli, who was greatly fond of Ballerini, left him in charge of the fieldwork on several important occasions and probably intended to designate him as his successor. In truth, from one of his letters it is clear that Ballerini was waiting to be confirmed as Professor of Egyptology at Turin University (Consonni *et al.* 2012, 19, 176–177). Unfortunately, he died in 1910.

Ballerini was also a skilled photographer and it was possibly for this reason that a separate developing room was always arranged in each camp. The use of photography in archaeology was not so common at the time and this great innovation was a valuable means of recording the state of excavation and of registering the most important finds still *in situ*.

To identify and correctly understand today what is portrayed in the photographs is a challenge, especially as the captions are often missing. One of the aims of this research is to give back voice to this 'mute' archive (Roccati 2008, 94).

Documents

MAI carried out four archaeological excavations at Heliopolis between 1903 and 1906 under the direction of Schiaparelli, with Ballerini as field director in 1904 and 1905. This was an extensive project and covered a large part of the ancient site, at the time mostly devoid of houses and human settlements. The investigated area included the sanctuary of the Sun, the Kom, the necropolis of Mnevis Bulls (called the 'Mnevis temple'), and the Late Period necropolis. In addition, they dug many trenches around the site area (on the history of excavations, see Curto 1988, 44–61; Curto 1990, 53–57, 107–112; Donadoni Roveri 1988, 39–40; Leospo 1998, 125–127; Moiso 2008b, 199–269; Raue 1999; Roccati 1989, 166–167. On recent excavations, see Abd el-Gelil *et al.* 1996; Abd el-Gelil *et al.* 2008; Khalifa and Raue 2008; Mahmud *et al.* 2008; Raue 2006; Saleh 1981; Saleh 1983; Saleh 1991).

Only few remains are still visible today. Over the centuries, the city was submerged by the annual Nile flood and, after the construction of the Aswan dam, the ground-water level rose. Moreover, urban development is another cause of loss of archaeological data, and currently the site can be dug only for emergency excavations. From the Graeco-Roman Period, many statues, obelisks, and architectonic remains were brought to Alexandria, Rome, and other imperial cities as spoils; plundering continued during Coptic and Byzantine times, and ancient materials were also reused for new buildings. In Medieval times, the site of Heliopolis was used as a stone quarry for the construction of Cairo. During the 19th century, two obelisks of Thutmosis III were sent as diplomatic gift to New York and London.

The Turin Museum acquired around 1550 objects from this site (inventory numbers Suppl. 2671–4221). At the end of the four campaigns, all the objects were inventoried according to findspot and typology, as we can infer from the manuscript inventory:

Suppl. 2671–2867: Temple
Suppl. 2868–2879: Mnevis Temple
Suppl. 2880–3844: Kom
Suppl. 3845–3877: Necropolis
Suppl. 3878–4196: Prehistoric village
Suppl. 4197–4221: Pyramid

For these reasons, MAI excavations must be considered of great importance. Schiaparelli never published the results, but today we can reconstruct in detail the work of MAI at Heliopolis through the study of the almost completely unpublished archival documentation of the site.

This documentation is stored in different institutions in the city of Turin: the State Archive (Archivio di Stato), the Royal Library (Biblioteca Reale), and the archive of the Soprintendenza per i Beni Archeologici del Piemonte e Museo Antichità Egizie (SBAPMAE). The material includes excavation diaries, final reports, letters, photographs, photographic plates, plans, sketches, and notes.

At this point of research, we can compile an inventory of the documents concerning MAI excavations in Heliopolis, as shown in Table 1. Further developments of this study will give us the possibility to deal with the objects from the site preserved in the Turin Museum, in order to understand their original context.

Table 22.1. Inventory of the material concerning the MAI excavations at Heliopolis. © authors.

Document	**Year**	**Author**	**pp.**	**Archive (Turin)**	**Inventory no.**
Excavation diary	1903	E. Schiaparelli	10	Archivio di Stato	3V (E1_6_9)*
Excavation diary	1904	F. Ballerini	50	Archivio di Stato	3V (E1_6_9)
Excavation diary	1906	E. Schiaparelli	1	Archivio di Stato	2V, 2M, 6F
Final report to the King, 14.08.1903	1903	E. Schiaparelli	32	Biblioteca Reale	
Final report to the King – draft (pp. related to Heliopolis)	1903	E. Schiaparelli	10	Archivio di Stato	3V (E1_6_1)
Final report to the King, 12.1904	1904	E. Schiaparelli, F. Ballerini	33	Biblioteca Reale	
Final report to the King – draft (pp. related to Heliopolis)	1904	E. Schiaparelli	4	Archivio di Stato	3V (E1_6_1)
Final report: letter to the Ministry, 14.08.05	1905	E. Schiaparelli	11	Archivio di Stato	2V, 1M, 9F
Final report: letter to the Ministry, 09.10.06	1906	E. Schiaparelli	15	Archivio di Stato	2V, 1M, 10F
Final report: letter to the Ministry, 28.10.06	1906	E. Schiaparelli	11	Archivio di Stato	2V, 1M, 10F
Plans and drawings	1904	F. Ballerini	9	Archivio di Stato	3V (E1_6_6)
Plans and drawings	1905	F. Ballerini	10	Archivio di Stato	2V, 6M, 7F
Manuscript inventory	1906 or later	E. Schiaparelli	63	Archivio di Stato	2V, 2M, 6F
Photographs and drawings of the slab with the plan of the Temple	?	?	4	Archivio di Stato	3V (E1_6_2bis)
Notes and drawings of some Djoser fragments	?	E. Schiaparelli	1	Archivio di Stato	3V (E1_6_3)
Photographs, drawings and notes on the Sethi I naos	?	?	37	Archivio di Stato	3V (E1_6_4-5)
Transcription of the obelisk hieroglyphs	1904	F. Ballerini	4	Archivio di Stato	3V (E1_6_7)
Letter 19.05. 1904	1904	F. Ballerini to E. Schiaparelli	7	Archivio di Stato	3V (E1_6_8)

Document	**Amount**	**Subject**	**Archive (Turin)**	**Inventory no.**
Letters	170	Varia	Archivio di Stato	2V, 1M, 6-10F
Photographs	40	Excavation	Archivio di Stato	2V, 5M, 11F
Photographs	156	Excavation and objects	Archivio di Stato	3V (E1_5_2-3)
Photographs	66	Excavation and objects	Fototeca storica, SPAPMAE	

* Fond: Sovrintendenza Speciale al Museo delle Antichità Egizie di Torino. V=Versamento (deposit); M=Mazzo (bundle); F=Fascicolo (folder).

The third deposit (3V) is stored in the State Archive since few months and the inventory numbers are still temporary.

Re-excavating Heliopolis: from the archive to the field

At the beginning of January 1903, Schiaparelli was ready to leave Italy for Egypt and start digging at Heliopolis, while Ballerini and Breccia were in charge of the excavations at Gizeh and Hermopolis. However, works began only after 15th April, as great part of the fields surrounding the obelisk of Senwosret I had been sold to private solicitors or granted to other excavators. Schiaparelli was then forced to obtain from the single owners the permission to excavate their fields:

> *Daminos ha delimitata la sua concessione. É un grande rettangolo con uno dei lati corti poggiante sull'obelisco di Heliopolis [...] ma mi diceva B. che non si sa come farà ad andare avanti perchè non ha mezzi e potrebbe essere che volesse farne una speculazione col Pro.re Schiaparelli se questi si presta.*
>
> Daminos has definied his concession. It is a big rectangle, with one of its shorter sides attached to the Heliopolis obelisk […] but I was told by B[arsanti] that he does not know how to manage it, as he has no financial resources, and maybe he will be ready to set an agreement with Schiaparelli, if he fancies it.
>
> (G. Salvago Raggi to E. Schiaparelli, 12/06/1902)

Thanks to the above mentioned documents it is possible to outline the historical plan of the site with its relevant monuments and to identify the archaeological context of some artefacts now stored in the Turin Museum. The most remarkable discoveries are described below according to their years of excavation (Fig. 22.2).

1903: the Kom and the sanctuary of the Sun

The first season was carried out from 15th April to 20th May 1903. Schiaparelli planned to start his work in Heliopolis from the necropolis, but the area was sold to private solicitors. For this reason, and in order not to lose the excavation concession, he decided to dig trenches in the area of the Kom situated north of the obelisk and in the land to its east:

> *Frattanto, poiché, per non decadere dalla concessione, era necessario fare almeno qualche saggio di scavo, lasciata da parte la necropoli, mi volsi all'area della città in quelle poche zone, e quasi tutte ristrette, dell'area stessa che erano ancora incolte o di proprietà demaniale.*
>
> In the meantime, in order not to lose the concession, it was necessary to make at least some excavation trenches, having left the necropolis aside, I turned my attention to the area of the city where there were those few narrow zones of the area itself still uncultivated or state-owned.
>
> (E. Schiaparelli, Final report to the King 1903, 24)

The first excavation was carried out in the western part of the Kom, north of the obelisk, in the area occupied by the Arabic village. Here, the mission investigated two wells. The first one was made of bricks and dated to the Roman times. The second one was of limestone and dated to the Saitic Period or later:

> *I primi saggi feci eseguire sopra l'esteso Kom, a nord del celebre obelisco di Usortesen, sul quale è costruito il villaggio arabo.*
>
> I excavated the first trenches over the extended Kom, north of the famous obelisk of Usortesen, on which the Arabic village is built.
>
> (E. Schiaparelli, Final report to the King 1903, 24)

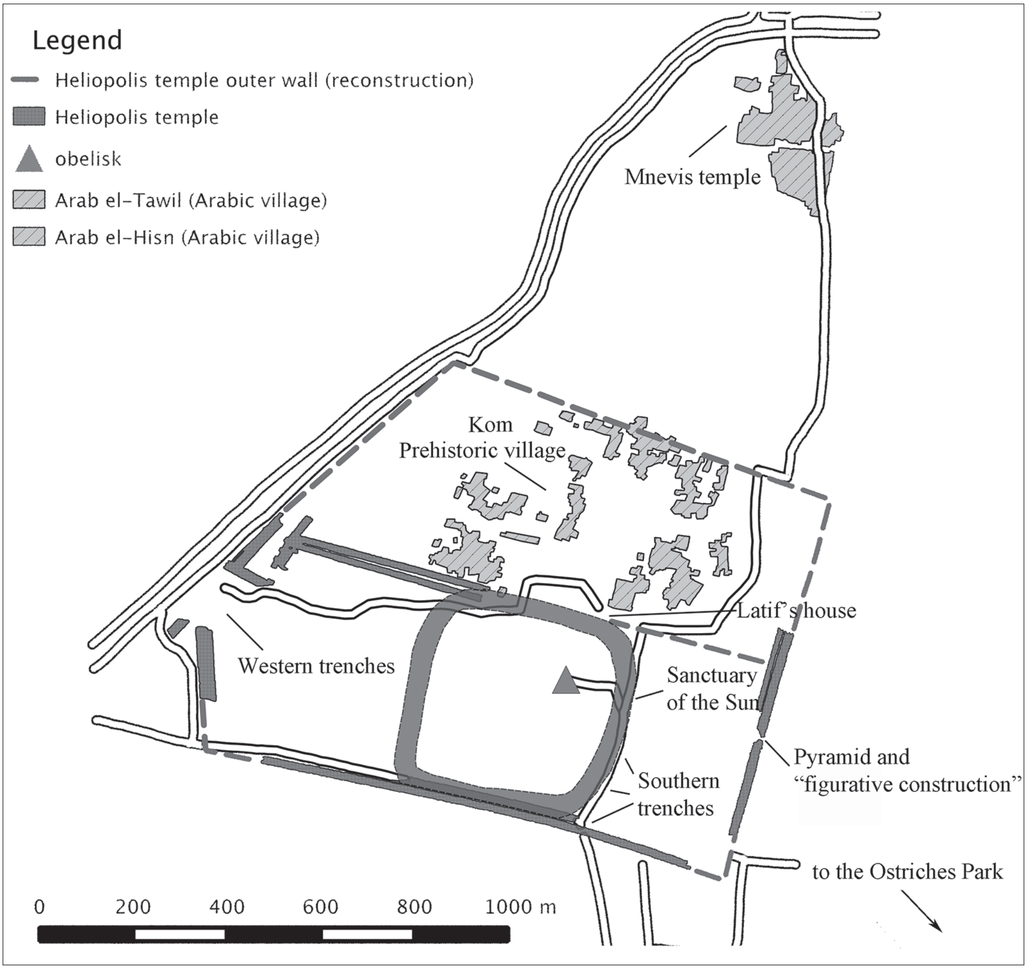
Legend
Heliopolis temple outer wall (reconstruction)
Heliopolis temple
obelisk
Arab el-Tawil (Arabic village)
Arab el-Hisn (Arabic village)
Mnevis temple
Kom
Prehistoric village
Latif's house
Western trenches
Sanctuary of the Sun
Pyramid and "figurative construction"
Southern trenches
to the Ostriches Park
0
200
400
600
800
1000 m

Figure 22.2. Heliopolis: excavated areas. QGIS elaboration based on Ricke 1935, Abb. 4. © F. Ugliano.

In the second part of the season, Schiaparelli was interested in the excavation of the Kom situated less than 100 m east of the obelisk, which extended to the north in a private garden known as Latif's house (Fig. 22.3). In Schiaparelli's opinion, this was the area where the sanctuary of the Sun should have stood. The first trench, 3 m wide and in S–N direction, was deep until the floor level of the temple. Here, Schiaparelli found a mud-brick structure, which he believed to be part of the temple itself:

> *Dopo pochi metri di scavo, sgombrate le macerie di origine più o meno recente, ci imbattemmo in un'antica costruzione di grossi mattoni crudi che non era un muro di cinta […].*
>
> After a few meters of excavation, once the debris of more or less recent origin had been removed, we came across a construction built in big mud-bricks that was not an enclosure wall […].
>
> (E. Schiaparelli, Final report to the King 1903, 26)

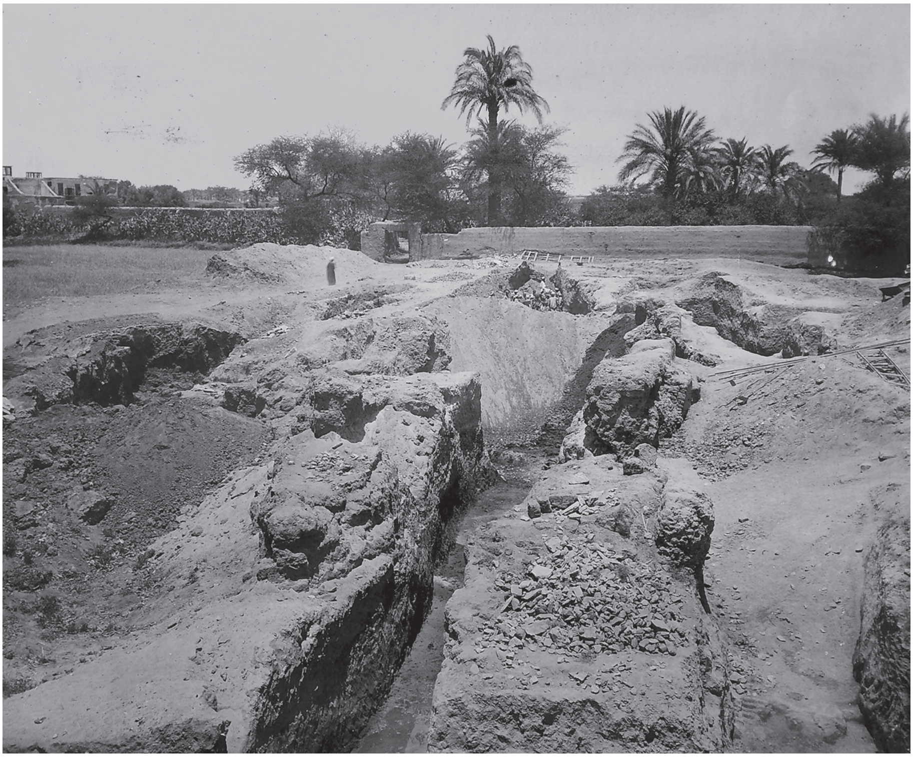

Figure 22.3. Heliopolis: excavation of the sanctuary of the Sun with Latif's house in the background. © Archivio di Stato, 2V, 5M, 11F, Prot. 5097/28.28.00 (16/12/2014).

A second trench was cut in E–W direction, where the excavators located a corridor running northwards and covered by a collapsed brick vault. They found many objects now stored in the Turin Museum, including the sphinx of Thutmosis II (Suppl. 2673), the naos of Sethi I (Suppl. 2676), a slab with the plan of the temple (Suppl. 2682), and many fragments of inscriptions dating to the reign of Djoser (Suppl. 2671) (Roccati 1989, 168–175).

Extending the trench westwards, they also found a large chamber, 11.30 m wide. It was filled with debris and small votive vases, and the vault was partly preserved.

> *Feci allora eseguire un secondo taglio perpendicolare al primo, da est ad ovest, e dopo poco si passò sopra ad un corridoio diretto verso il nord, la cui volta in mattoni crudi doveva essere caduta da tempo antichissimo […]. Frattanto, proseguita la trincea verso ovest, venne in luce altra grande camera, la cui volta pure in mattoni crudi, non era ancora del tutto rovinata.*
>
> Then I made a second cut perpendicular to the first one, from east to west, and later we found a corridor heading north, whose vault of mud-bricks must have collapsed in very ancient times […]. Meanwhile, continuing the trench westwards, another big chamber came to light, and its vault, also made of mud-bricks, which was not yet completely ruined.
>
> (E. Schiaparelli, Final report to the King 1903, 26)

Corridors and vaulted chambers were thoroughly investigated during the 1904 season, to better understand the structure of the Sun sanctuary (see below).

1904: the sanctuary of the Sun, the southern trenches, the Mnevis temple, and the necropolis

The second season in Heliopolis is one of the best documented among MAI's works in Egypt. This is mainly due to Ballerini's diary and plans, which allow us to define and locate almost all the trenches dug in 1904.

First, the work in the area of the Sun sanctuary was resumed and new excavations were undertaken from 18th April to 8th May in the same area investigated during the previous season. The aim of the new exploration was to clarify the nature of the mud-brick structure unearthed the previous year. However, the excavation reached the water level in several sectors and was then suspended:

> *[...] a m 4,00 circa dal livello della strada si giunge ad uno strato abbondante di acqua, sicchè è impossibile proseguire.*
>
> […] 4 metres below the surface, we intercepted the water level, so it is impossible to continue the excavation.
>
> (F. Ballerini, Excavation Diary 1904, 28)

Despite poor results and findings, Schiaparelli and Ballerini were able to confirm their earlier interpretation. To the King they reported the unearthing of a circular mud-brick structure as part of the original Sun temple of the earlier dynasties, covered by a single vault, and divided into a central corridor and four subsidiary concentric galleries housing several 'crypts' or hideouts:

> *Nella parte che si poté esplorare, era un edificio di forma circolare o, più esattamente, un segmento di circolo, la cui lunghezza, sebbene siasi seguita per circa centocinquanta metri, non si poté però ancora determinare. [...] In larghezza o profondità misurava circa quaranta metri ed era coperto da una sola ed unica volta, [...] formando cinque navate, delle quali quella centrale della larghezza di oltre dodici metri. [...] Nell'interno di essa si era potuto lasciare dei vani, [...] come cripte o nascondigli nei quali si riponevano probabilmente gli oggetti di maggior pregio.*
>
> In the area that we could explore, there was a circular building, or, to be more accurate, a segment of a circle, of which the length, in spite of following it for one hundred and fifty metres, was impossible to define. […] It was forty metres wide and was covered by a single vault, […] divided into five corridors, with the central one more than twelve metres wide. […] Within it, some hideouts were observed in crypts and caches, […] maybe in order to hide the most precious objects.
>
> (E. Schiaparelli, F. Ballerini, Final Report to the King 1904, 20–22)

At the same time, several trenches were opened in the southern-eastern, northern, and western sectors of the concessions. The aim was to better define the nature of the area immediately along the circular temple, in order to understand the topographical organisation of the sacred part. From Ballerini's diary, we can assume that at least three different series of trenches were dug along the eastern border of the sanctuary, starting from the southern door of the outer walls. These excavations lasted for almost the entire season, from 10th April to 8th May. Another trench, defined as 'trench in Bey's field', could also be located in the above-mentioned area. Finally, in order to define the extension of the circular structure itself, Ballerini and Schiaparelli decided to investigate an area located immediately north-east of the supposed northern-eastern corner of the sanctuary. This area was occupied by the garden of the 'Latif's house' and a special concession was obtained. The excavation was carried out in two weeks, from 13th to 25th April, when the dig was suspended due to the interception of the water level at a depth of 7.50 m from the surface.

In addition a new excavation was undertaken from 9th to 26th April in the area immediately to the west of the sanctuary, within the outer wall perimeter. The results did not meet expectations, but a fine wall of worked white stones was found north of the supposed location of the Avenue of the Sphinx. Less than ten years later, William Matthew Flinders Petrie investigated the same area, where he unearthed, photographed, and removed the above-mentioned wall (Petrie and Mackay 1915, 1–7, pl. IX).

Furthermore, Ballerini investigated a Late Period necropolis in the southern-eastern fringe of the concession, by the so-called 'Ostriches Park' located not far from the old hippodrome in Matariah. The results were not satisfactory and the excavation was conducted in three days, from 27th to 30th April:

> *Lo scavo vicino al parco degli Struzzi continua dando mediocri risultati: dal complesso quelle tombe costituiscono una necropoli del più tardo periodo egiziano a giudicare dalle perline e da uno scarabeo di smalto rinvenuto sotto la sabbia di uno dei pozzi. Del resto sono pressoché tutti identici. Sono scavati più o meno rozzamente. [...] Però tutte sono state già violate e nella più parte è stata asportata e in parte caduto il rivestimento di pietre.*
>
> The excavation close to the Ostriches Park is giving mediocre results: it seems that these tombs are part of the Late Period necropolis, judging from the beads and a faience scarab unearthed in one of the shafts. Apart from that, they are all identical; they are excavated more or less in a rough way. […] But all of them have already been looted, and the rock inlay has been removed or it fell down.
>
> (F. Ballerini, Manuscript Diary 1904, 20)

Finally, the excavations of the so-called 'Mnevis temple' are worthy of note, 1200 m north of the sanctuary and 300 m east of the 'Pyramid':

> *A circa milleduecento metri al nord del santuario rinvenimmo i ruderi del tempio del torello Mnevis, adorato ad Eliopoli, come il torello Apis era adorato a Menfi. Il tempio, costruito con belle pietre calcari, nello stile del nuovo impero, era stato completamente distrutto per farne calce.*
> *[...] Infine, a circa trecento metri ad oriente del santuario, rinvenimmo i resti di una grande costruzione in mattoni crudi, [...] una piramide, o una piramide tronca di circa quaranta metri per lato, alla quale era addossato un edifizio che si presentava sotto le forme più misteriose e strane.*
>
> About 1200 m north of the sanctuary, we found the debris of the temple of the bull Mnevis, worshipped at Heliopolis as the bull Apis was worshipped at Memphis. The temple, built in fine limestone, stylistically datable to the New Kingdom, had been completely destroyed to obtain mortar. [...] Finally, 300 m east of the sanctuary, we found the remains of a huge mud-brick structure, […] a pyramid or a truncated pyramid about 40 m per side, close to which was a building of the most mysterious and strange shapes.
>
> (E. Schiaparelli, F. Ballerini, Final Report to the King 1904, 29–31)

According to the manuscript inventory, several important artefacts and unique architecture elements were unearthed in the areas listed above: first, a huge granite shrine (Suppl. 2868) dedicated by Psamtek II to the Mnevis bulls. The shrine was badly damaged, but several blocks that were still *in situ* allowed Schiaparelli to suppose that the original structure was at least 8 m high, 7 m long, and 5 m deep (Fig. 22.4). Close to the pyramid (possibly a mastaba, but the real nature of this structure still needs to be defined), there was a 'figurative construction' representing the world as conceptualised by the ancient Egyptians: the sky was made out of dark and small mud-bricks, a thin layer of yellow sand represented the air and the mountains and hills reaching the sky and sustaining it. This peculiar construction has no known parallel and it is really difficult to clearly understand what its function was. According to the retrieved artefacts (Suppl. 4197–4221), Schiaparelli claimed that it was built during the 1st or the 2nd dynasty. Unfortunately, there is no other account for this peculiar construction, as this area was excavated only by Schiaparelli and Ballerini, and we can rely only on their reports.

1905: the necropolis and the Kom

The third season was undertaken in late spring 1905, with Heliopolis the last site investigated during that year. After completing the exploration of the Sun sanctuary, the expedition focused on two different targets, the necropolis and the Kom:

> *Infine, nell'ultimo mese di Maggio, si ripresero gli scavi di Eliopoli: ma sia per la stagione ormai inoltrata, sia per l'impossibilità di aver un numero adeguato di operai, tutti impegnati nei lavori dei campi, ci dovemmo limitare a due sole esplorazioni.*
>
> In the end, in the last month of May, we resumed the excavations at Heliopolis: however, because of the late season and the impossibility of having an appropriate number of workmen, as they were all occupied in the fieldwork, we had to focus only on two explorations.
>
> (E. Schiaparelli, Final report to the Ministry 1905, pp. 11–12)

As in 1904, Schiaparelli decided to dig some tombs, probably in the area of the so-called 'Ostriches Park'. The tombs, dating to the Ptolemaic Period, were badly preserved. For this reason, the mission turned to five big trenches in the area of the ancient city. This area corresponds to the Kom north of the obelisk, where the two wells were found in 1903:

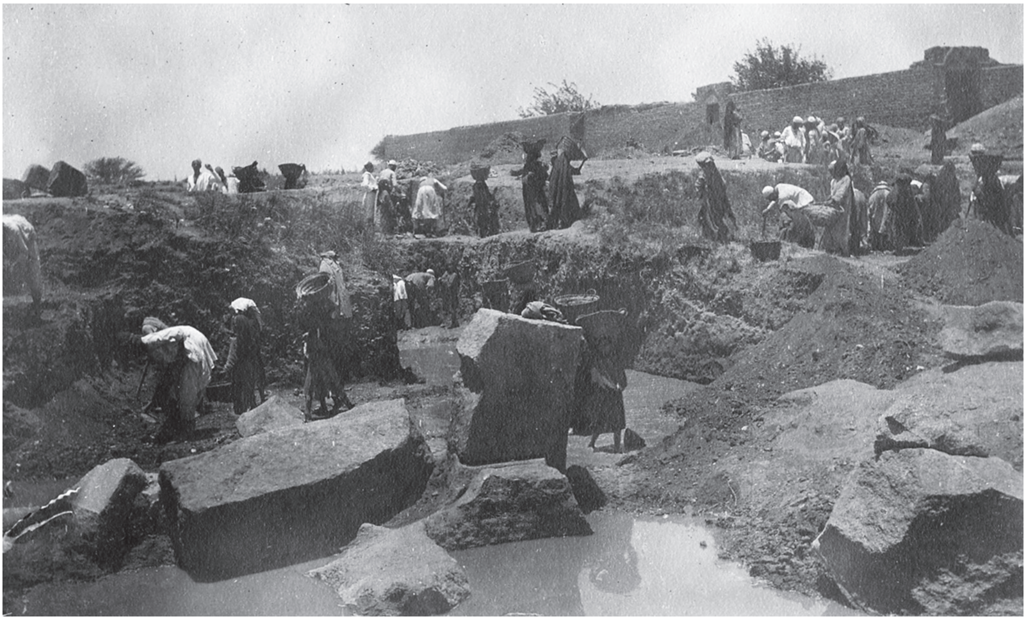

Figure 22.4. Heliopolis: excavation of the so called 'Mnevis temple'. © Archivio di Stato, 2V, 5M, 11F, Prot. 5097/28.28.00 (16/12/2014).

> *Ivi in un punto, nel quale pochi anni addietro erano stati rinvenuti alcuni frammenti di iscrizioni, feci eseguire un largo e profondo taglio fino a raggiungere il piano antico della città.*
>
> Here, where few years ago some fragments of inscriptions were found, I decided for a large and deep cut to be done, in order to reach the ancient level of the city.
>
> (E. Schiaparelli, Final report to the King 1903, 24)

The trenches reached 9 m below the Kom's level, with extended stratigraphy going from Arabic to prehistoric times. Thanks to the report to the ministry, we can infer the following model:

1 m	Pottery, fragments of pottery, and other objects from Arabic times to late Roman Period.
2 m	Floor of a Roman Period temple; two columns.
6.5–7 m	More layers of debris: according to the type of pottery, they must be collapsed Ptolemaic and Roman mud-brick houses, Saitic Period remains, and few remains of earlier date until the 20th dynasty.
8 m	Fragments of pottery dating to the Old Kingdom, the 1st dynasty, and earlier periods.
9 m	Deposits of prehistoric pottery and flint tools.

Ballerini drew six plans and one sketch of the trenches. The second plan and the sketch show the two columns quoted in the final report as coming from the floor of a Roman temple, 2 m below the level of the Kom. In addition, the same structures are visible in some photographs (Figs 22.5–22.6).

1906: the prehistoric village

Beneath the two columns discovered in one of the five trenches, several artefacts dating to the predynastic period were already unearthed in 1905: pottery, flint tools, and bone instruments (Suppl. 4036–4196). In 1906, other two trenches were completed to the east and to the west of the Late Period temple remains. They revealed a situation similar to the one uncovered during the previous year. At about 5 or 6 m below the surface, just beneath the dynastic houses, more predynastic pottery, flint and bone tools were unearthed:

> *Scavi 1906. Trincea occidentale attigua alla precedente […] sotto le soglie delle case, si passa allo strato successivo quello preistorico, e cioè delle selci, sopra l'acqua e nell'acqua.*
> *[…] Trincea orientale – si trovò il suolo assai rovistato. Gli oggetti n° 4158 a 4179 si trovarono disordinatamente alle altezze di 5–7 metri, insieme a molti frammenti arcaici […].*
>
> 1906 excavation. Western trench, close to the previous one […] beneath the houses' thresholds, there is the next layer, the prehistoric one, i.e. that of worked flints, above and in the water.
> [...] Eastern trench – we found the soil badly ransacked. The objects from [Suppl.] 4158 to 4179 were found cluttered at a depth of 5–7 m, together with several archaic fragments […].
>
> (E. Schiaparelli, Manuscript inventory, Suppl. 4099–4188)

Due to the nature of the uncovered artefacts, Schiaparelli claimed the possibility that, beneath the dynastic levels, an original predynastic dwelling had been settled. After re-examining the available documentation, he was able to provide a complete stratigraphy for the Kom, in particular to define the nature of the predynastic remains. Therefore, the final results of the Italian excavation at Heliopolis are of extreme importance, as no predynastic settlement has

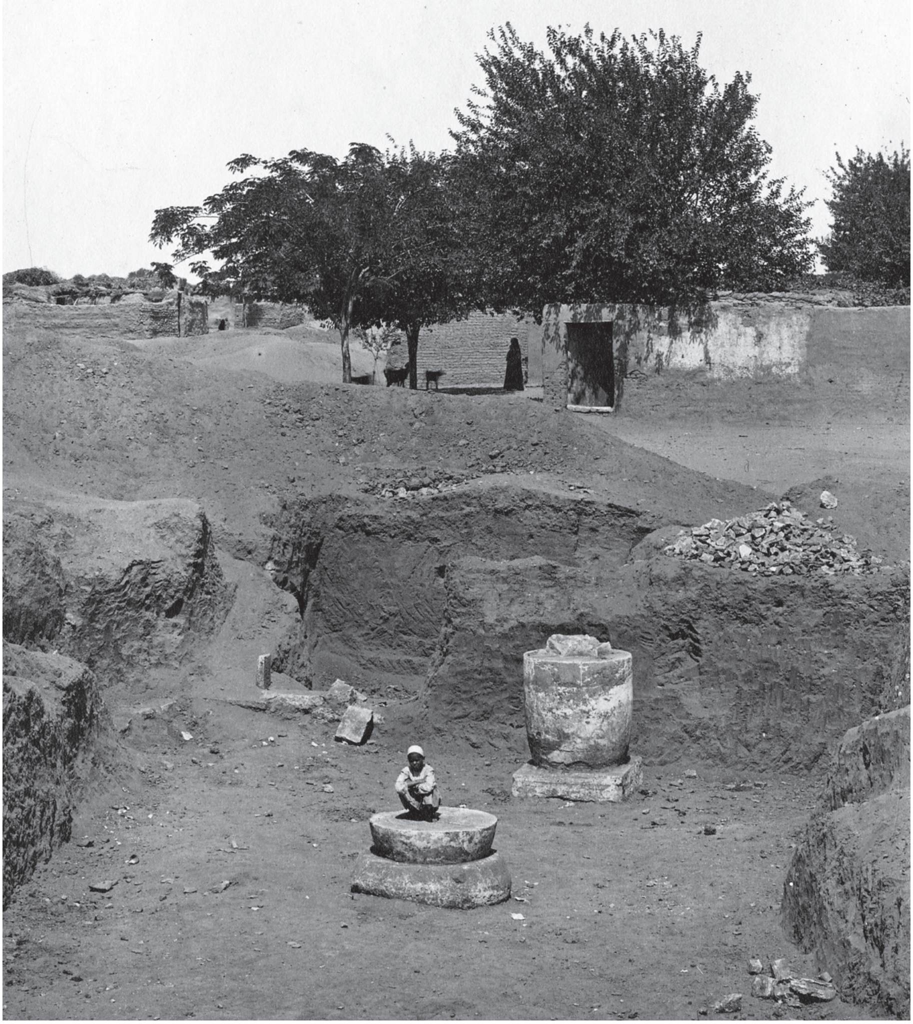

Figure 22.5. Heliopolis: excavation of one of the Kom trenches. © Archivio di Stato, 3V, E1_5_2, Prot. 5097/28.28.00 (16/12/2014).

been yet recovered there. Ferdinand Debono excavated a small cemetery in the 1950s, dated to the end of Naqada IIb, which was found during the construction of a building-complex in the area now known as Merryland (Debono and Mortensen 1988, 7). This cemetery was estimated to contain at least two hundred burials and to have been in use for a short span of time, possibly 30–50 years. It was the cemetery of a small settlement that Debono believed to be located north-west, no farther than 500 m from the settlement itself (Debono and Mortensen 1988, 50). The distance between the cemetery and the Kom excavated by MAI is about 3 km, but only an in-depth analysis of the material uncovered by Schiaparelli (now stored in the Turin Museum) and a comparison with the artefacts unearthed by Debono could confirm the association of the cemetery and the settlement.

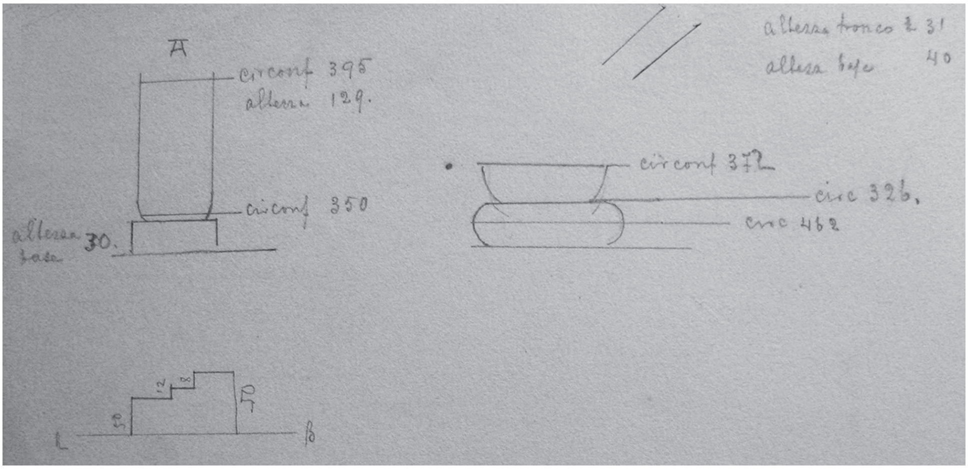

Figure 22.6. Heliopolis: sketch of the columns found in one of the trenches. © Archivio di Stato, 2V, 6M, 7F, Prot. 5097/28.28.00 (16/12/2014).

Conclusion

The study of the unpublished archive of the excavations carried out by Schiaparelli and his Italian Archaeological Mission between 1903 and 1906 sheds new light on the archaeological topography of one of the most important religious sites of ancient Egypt.

This paper allows us, for the first time, to better define the Italian contribution to the study of Heliopolis, from the predynastic to the Graeco-Roman Period.

Notes

1 Introduction; Documents; 1903: the Kom and Sanctuary of the Sun; 1905: the necropolis and the Kom.

2 Ernesto Schiaparelli and MAI; 1904: the Sanctuary of the Sun, the southern trenches, the Mnevis temple and the necropolis; 1906: the prehistoric village; Conclusion.

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23

Social Aspects in Ancient Egyptian Personal Correspondence

Susan Thorpe

There has been considerable interest in ancient Egyptian letters, but the methodology of the research has resulted in a focus on individual letters and collections, rather than considering the wide range of extant personal correspondence from a societal perspective across the various periods of ancient Egyptian history. My PhD thesis looks at the broader view and considers a range of letters chosen from across the timeframes of ancient Egyptian history. In selecting the correspondence studied, I have focused on personal letters – rather than those to and from royalty or the vizier – in order to gain insight into the daily lives of the people. The areas investigated include: social aspects such as behaviours and lifestyle; the personalities and background of the writers and recipients; the differences in the reasons for writing; the variations of style and modes of address that may have occurred, depending on their status and the time of writing. For this paper, I have chosen letters that fall under the heading of 'complaints'. My primary focus will be on the similarities and differences in reasons for writing them, the differing ways such complaints can be structured, aspects of societal structure, personalities, and historical context. What is the primary reason for a complaint? Sweeney suggests they are for 'a state of affairs which is unsatisfactory' (2001, 190). The recipient has done something that the sender is unhappy about, or has failed to do something that the sender has asked him to do. Analyses of these different 'unsatisfactory states', which underlie the reasons for writing, not only reveal the reason for the complaint but also the different ways in which the complaints were structured, as well as how the sender worded the letter, or what tactics were used to help ensure that whatever the unsatisfactory state of affairs was, the recipient would rectify it.

The first letter from the early Middle Kingdom has been dated to the early twelfth dynasty (James 1962, 82–92; Wente 1990, 65). Nehsi, a general, is complaining to a person named Kay that Senet has written to him saying 'no provisions have been delivered to her'. (Wente 1990, 65). Senet claims that she has not received the measures of barley that Nehsi sent to her and to Kay, in the charge of Kay's son and daughter 'who fetched it with the barge [....]' (Wente 1990, 65). Nehsi demands that the matter be rectified with delivery of the required provisions in full, and continues: 'Moreover what is the meaning of [letting] yourself be turned away from your own daughter?' (Wente 1990, 65). He says that due to his son and daughter's failure to deliver the barley, Kay will have 'succeeded in killing her' (Wente 1990, 65). This implies that Senet is another daughter to Kay. Nehsi then comments he has 'discerned the character of my stepmother' and asks whether Kay is pursuing his wife's wish 'by killing off my household' implying that Kay could also be Nehsi's father (Wente 1990, 65). He concludes: 'Now that word is sent to me can I remain confident that I have given provisions to my household?' (Wente 1990, 65).

This letter does not reveal much by way of personal details about the sender or recipient aside from the following facts: Nehsi is a general whose letter reflects an authoritative personality used to having his orders carried out correctly. There is no indication of Kay's occupation or social status, although his son is named as Nefer-the-Scribe. The opening words are a variation on the form of address from the period *ḏd n* 'X speaks to Y' which is an introductory opening normally used in letters between relatives. Here the form is *r ḏd,* which translates 'a communication' by the general Nehsi, but he adds a more elaborate greeting which, although a characteristic epistolary feature of this period, could be designed to flatter Kay and make him more responsive to Nehsi's urgent request – 'How are you? Are you alive, prospering, and healthy? May Montu, lord of the Theban nome, and all the gods [help] you and provide you with a million years in [life, prosperity], and health [starting from today], as I desire' (Wente 1990, 65). Invoking Montu as 'lord of the Theban nome' is another indication of a dating to the early years of the twelfth dynasty when this god had been elevated following the defeat of the Heracleopolitan dynasty.

The recipient has failed in his responsibility to ensure the delivery by his son and daughter of supplies to the general's household, the implication being he has kept them for himself. The complaints in this letter are structured in the form of a series of questions that invite Kay to explain his actions and, in the case of the first question, to rectify them. The opening question begins with the words 'What is the meaning/*in ir*' of Kay's failure to ensure delivery, and is followed by a direct request to remedy the situation. Nehsi's second question of complaint, again introduced by 'What is the meaning/*in ir*', is concerned with Kay's behaviour towards his own daughter. The structure of this question is not one that requires a solution from the sender, but in its criticism of Kay's actions requires the recipient himself to offer an explanation for his behaviour. His final question asks whether he can now be confident the matter has been rectified, emphasising Kay's responsibility to fulfil the request.

From a social aspect the letter suggests an intricate and ambiguous set of responsibilities and relationships. As previously noted, the inference is that Senet is Kay's daughter with responsibility for Nehsi's household, and that Kay's wife is Nehsi's stepmother. Kay, therefore, is Nehsi's father. It shows that despite his rank of general, Nehsi has to rely on what appear to be family members to ensure the supply of provisions, in this case barley, to his household. It shows the importance of basic needs even for a general's family, that these are not automatically taken care of despite his rank. There is no indication of their exact location or of where he himself is based. It would seem that there is some distance between them as the provisions are being transported by barge. The urgency of the general's letter could be caused by a state of famine in the area where he and his family live, as the reference to Kay killing his own daughter implies that by not receiving the required measures of barley, she and Nehsi's household will die from starvation. It is important for him to ascertain what has happened and it is uncertain how long it took Senet's letter to reach Nehsi. A relationship between Kay and Nehsi is implied, and the greeting that Nehsi uses is a combination of the familial, while the content of the letter provides an insight into relationships and personalities.

There are few extant examples of personal correspondence from the eighteenth dynasty. The following letter is one of two found stuck to mummy wrappings (Peet 1926, pl. xvii; Wente 1990, 92), and is: 'Addressed by Ahmose, Peniati's (man), to his master the chief treasurer Tai,' and asks why a maidservant 'who was with me' has been taken away and given to someone else (Wente 1990, 92). He asks: 'Let payment for her be accepted for her to be with me because she is only a child and unable to work' (Wente 1990, 92). He further suggests that Tai command him 'to bear her work load just like any maidservant' (Wente 1990, 92). He cites a letter from the girl's mother in which she reprimands him for allowing her daughter to be taken away, and that she had not complained to Tai herself 'because she is like a daughter to you' (Wente 1990, 92).

In the other letter, Ahmose is named as 'scribe', and is 'of Peniati'. On a Louvre palette (E.3212) dated to this period there is a description of the '[…] scribe Ahmose, lieutenant of Peniati, director of works of Hermonthis'. It is therefore reasonable to assume that he penned the letter himself. The recipient, Tai the treasurer, designates him as a superior to the scribe's master Peniati, and refers to himself as 'Peniati's man'. This imbues his complaint with increased authority. At this point there is no more background to the treasurer himself. The letter does not use *ḏd* formula, which would indicate an elaborate greeting. In this letter the wording is ḏd tn 'that which was said' by Ahmose to the treasurer Tai. Bakir (1970, 48) sees this style as being indicative of business or official matters, a kind of modern 'memo form,' and feels that this usage is emphasised in the letter by the combination with the use of 'lord.' However this letter can be seen as an exception – that the abrupt beginning combined with the content is indicative of personal concern rather than business related.

The 'unsatisfactory state' that Ahmose is concerned about is that Tai is reneging on an agreement that the maidservant should stay with him. The structure is once more in the form of a question, which asks 'why is it that'/*Hr m* the sender's maidservant has been taken away, and is followed by specific instructions as to how the recipient might rectify the situation by agreeing to one of Ahmose's suggestions. It is implicit in the wording of the letter that it was sent in order to get an explanation and have his complaint addressed and resolved. In addition there is a 'complaint within a complaint' in this piece of correspondence which is the letter from the girl's mother to Ahmose, saying that it was his fault, the girl was in his charge, and implying that it is up to him to obtain the girl's return.

The situation that prompted this letter could be seen to illustrate an aspect of social domestic *mores*. While Glanville comments on our lack of knowledge 'on the subject of slavery and servitude' at this time the relationship does not suggest that the child in question was a slave (1928, 310). Bakir cites this as an example that a slave could be claimed back, but the term used here is *b3kt* not *ḥmt*, and he notes that the daughter is described as *ḥnꜥ* /together with Ahmose, when he makes the suggestion *jmj šsp.tw šbt s ḥnꜥ* / let one exchange payment for her to be together with me' (1978, 78–9). The fact that the mother uses the words 'like a daughter to you' suggests rather that her mother has entered into an agreement with Ahmose to be something of a father figure to the girl. While the reason for the girl being in his care is not specifically stated, the offers Ahmose makes to ensure her return – that payment for her be accepted, or, as an alternative, his own services instead as a substitute maidservant – suggests a moral responsibility and a private concern for the child, rather than one connected with a business relationship with the mother that was perhaps based on training for her daughter in domestic service. It is also possible that the mother was in some way related to Ahmose. Although Ahmose does not use any complimentary greeting at the beginning of the letter, the ideas he presents as a means of solving the problem are somewhat deferential in nature. This tactic is perhaps designed to soften the complaint by taking on the burden of remedying the matter himself. The content of the letter, while addressed to the chief treasurer, reflects a personal and private concern. It provides some societal knowledge about domestic responsibility, rather than any administrative issues and as such, paints a more personal picture of people and their problems, rather than being a formal bureaucratic document.

A number of letters have survived from the Ramesside Period. One from the twentieth dynasty, was from the mayor of Elephantine, Meron, to the chief taxing-master Menmarenakht, regarding unjustified tax demands (Gardiner 1948a, 72; Wente 1990, 130). While calling upon all the gods to keep the taxing-master healthy, Meron complains that 'the scribe Patjauemdiamon of the House of the Votaress of Amon has come […] to demand that grain which has been specified for the House of the Votaress of Amon' (Wente 1990, 131). Meron goes on to detail the measures of barley being demanded – 100 *khar* measures – and he points out that there are 'no field holdings yielding such an amount' (Wente 1990, 131). The scribe explains that this is because of certain land holdings Meron has, namely the '*khato*-land of the *gezira* of Ombi'. But Meron denies ownership, declaring that the land in question is a 'holding of some free tenants, who pay gold into Pharaoh's treasury', and has nothing to do with him (Wente 1990, 131). He also mentions that the matter of another holding 'in the vicinity of Edfu' has also been brought up 'a mere four arouras of land…upon which I had put one man and one yoke of oxen who cultivated the scrap of land which they found usable in it' (Wente 1990, 131). However, he avers that all the barley that came from there '40 *khar* measures' he had handed over to Patjauemdiamon, swearing 'with a firm oath' that he had not touched 'a single measure or a single half measure thereof' (Wente 1990, 131).

The opening form of address shows the rule of precedence in which the sender defers to his superior by putting the latter's name first 'may Amon [favour] Menmarenakht and follows with the words 'the mayor of Elephantine sends a communication' using just the words *swḏ-jb* from this introductory formula without the following *n nb- f* (Wente 1990, 131). In the following 'complimentary preamble' there is the invocation to life, prosperity and health in the favour of a god, here Amun-Re. Meron invokes him again as 'Amon Re-Harakhti when he rises and sets' (a title not found before the twentieth dynasty) and calls upon his own local gods 'Knum, Satis, Anukis and all the gods of Elephantine' praying they may 'keep the chief taxing master healthy, to give him...a long lifetime and a good ripe old age, and to give him favours in the presence of Amun-Re, King of the gods l.p.h his good lord, and in the presence of Pharaoh l.p.h his good lord' (Wente 1990, 131). Meron's use of this full preamble shows recognition of Menmarenakht's status. In addition, he addresses him using the imperative *ssnb*, which translates as 'make' or 'keep healthy' and is used only in reference to persons of very high rank. Elsewhere (P. Geneva D191), Menmarenakht has the additional title of Overseer of the Granaries, which would signify his responsibility for Egypt's two main sources of wealth. Meron is, therefore, taking his complaint to the highest financial authority.

This unsatisfactory state of affairs is an administrative one. Meron is pointing out that he is being faced with unjustified tax demands. In this letter neither of the complaints are phrased as a direct question demanding to know 'why' like the examples in the previous letters, nor does he suggest how the situation should be remedied. Instead the style is a restrained and factual one giving the reasons Meron feels these tax demands are unjustified. The letter has the tone of a bureaucratic communication appropriate for a complaint to a higher authority in which Meron does not specifically blame either his recipient, or the scribe involved as a third party in the second issue regarding the land near Edfu. He implies that it is a mistake that will be easily recognised by the chief taxing master, and resolved. He does not formally request that his recipient rectify the matter. This complaint is not lodged as personal grievances demanding explanation and redress. In addition to this deferential approach, and as possibly a further tactic to get his complaint resolved, he has addressed his recipient with the imperative *ssnb,* a form used for persons of very high rank, thereby following the rule of precedence and including a full complimentary preamble.

The content of the letter has shown the manner in which a complaint of this administrative kind could be addressed, and gives an insight into a differing structure of land management under Meron's jurisdiction. The management of royal estates (*khato*-land) was normally in the hands of people like Meron, the mayors of provincial towns. As such he would have been responsible for the cultivation of the land and its produce, and would have had to accept liability for any lack of stipulated provisions to the Treasury or any other recipient to whom they were directed (Gardiner 1948b, 165; Katary 1989, 207–8). In this case, it appears the land in question is no longer in this category but has been re-designated to become tenanted land, and he sees the tenants as having the responsibility for paying taxes due. The scribe demanding the taxes of grain payment is from the House of the Votaress of Amun. Other Ramesside documents relating to this form of taxation indicate that she was a person of royal blood with a position as high, or higher, than the royal wife, and her 'house' was demanding income in the traditional fashion. The status of the demand is reflected in the fact that Meron saw fit to address his complaint to such a high authority as Menmarenarket to have the situation rectified. It also indicates this situation regarding tenanted land was an authorised one. Meron was not fabricating a story in order to avoid paying taxes. Finally, Meron declares that he had given Patjauemdiamon all the measures of barley that had been harvested from a 'mere 4 arouras of land' that was as far away as Edfu is an indication of the extent of the authority of the Mayor of Elephantine.

A second letter from the twentieth dynasty, probably just after the reign of Ramesses III, is another bureaucratic 'unsatisfactory state of affairs' and is from Khay to the mayor of Elephantine, Montuhikhopeshef (Posener-Kriéger 1978, 85; Wente 1990, 128). In it, he complains: 'I opened the jar of honey which you had procured for the god... but I found that it was full of lumps of *gs*' (Posener-Kriéger 1978, 85; Wente 1990, 128). This was an ointment used for anointing purposes and inappropriate for a divine offering, but Khay continues in a restrained manner, 'so I resealed it and sent it back south to you. If it is someone else who gave it to you, let him inspect it' (Wente 1990, 129). He continues by asking the mayor to find some good honey and send it, or if there is none to have the *wꜥb* priest Netjermose send some incense instead.

The structure of the letter is similar to the previous example, a straightforward statement of complaint to a bureaucratic error. The whole tone of the letter is very restrained and polite. There are no demands to know 'why' or 'how' this has happened, and he is careful not to attach blame to his recipient, who sent the honey. Khay's greeting uses an introductory standard form for sender to recipient *ḥr nḏ-ḫrt*. He continues with a full complimentary preamble similar to the previous letter invoking the favour of Amun-Re, King of the Gods, calling upon him as 'Amun-Re Harakhti when he rises and sets' together with 'Harakhti and his ennead' to keep him healthy and alive and in the favour of Harakhti. He also includes phrases such as 'let Pre keep you healthy' and 'then shall Amun keep you healthy'. While the initial greeting does not follow the rule of precedence by putting his recipient's name first, the use by Khay of this full preamble before the subject of his letter shows the respect due to a superior recipient and is in line with the polite wording of his complaint.

In this case Khay, having specified the problem provides the solution as well, which is just a simple request to replace the honey or to send some incense instead. He uses the tactic of introducing a third party as the one to blame 'if it is someone else who gave it to you let him inspect it' giving his recipient the benefit of the doubt as being the person who made the error, not wanting to antagonise a person in higher authority and have his request refused.

Khay's title is lost but he is 'of the house of Harakhti' which is a possible reference to the solar chapel on the roof of the temple of Amun at Karnak. The name of the mayor of Elephantine is incomplete but has been read as Montuhikhopeshef. In the Turin Indictment Papyrus P.1887, from the reigns of Ramesses IV and Ramesses V, this name is also cited as belonging to the Scribe of the Treasury who was then acting as Mayor of Elephantine. According to this text thieves had stolen garments from the temple of Anket. Montuhikhopeshef confirmed their guilt and stated that they had sold the garments to a workman at the Place of Truth. However, this acting Mayor accepted a bribe from the thieves and let them go. Given the dating of this letter to a similar period it is therefore possible that the recipient of this letter is the same Montuhikhopeshef, and that the delivery of *gs* ointment instead of honey was not a mistake but the action of this same corrupt official.

The letter notes that the jar of honey at the centre of this complaint was intended as a divine offering, attesting to the importance of the product as part of temple ritual. The role of bee-keepers in the Theban area in the eighteenth dynasty has been illustrated by the tomb of Rekh-mi-Re at Thebes, where a representation of the hives and the smoking out of the bees as well as the extraction of the honeycomb can be seen (de Garis Davies 1973, 44–5). The need for bee-keepers to be protected is noted in the Elephantine decree of Ramesses III, and a ‘head of the bee-keepers of Amun’ is on the list of temple officials at Karnak. Another indication that honey could be sourced in Upper Egypt are the jar inscriptions from the city of Akhenaten which refer to two different varieties of honey, *stf* and *gmgm* (Pendlebury 1951, 175). Confirmation of the use of honey in divine offerings is also seen in texts from the temple of Seti I at Abydos. In the words to be spoken the offering of honey is associated with the sweet eye of Horus and the secretion of the eye of Re (Moret 1988, 71). An allowance of honey of 4 *hins* per day was included amongst the offerings to be placed on Ramesses III’s table of silver at Karnak, and 1065 *menet*-jars have been noted in P. Harris 1 for delivery to the temple of Amun for the ordinary service.

As an insight into customs, daily problems and personalities, this letter has confirmed the importance of honey as a product for divine offerings. While Khay has been careful not to apportion blame, it has also provoked thoughts as to whether this was an accidental bureaucratic mistake in supply, or a purposeful replacement of the correct goods by a fraudulent official, providing insight into the irregularities, intentional or not, that occurred in such areas. The fact that Khay had to source his honey from Elephantine rather than from the Theban area is a possible indication of demand exhausting supply, confirming the extensive use of the product in the temple rituals.

The final letter from the Late Ramesside period (Černý 1939, 60; Wente 1990, 200), is dated to the ten year period known as the Renaissance era that coincided with the last 10 years of the reign of Ramesses XI. In this brief and pointed communication, the principal of the harem of Amon-Re, Herere, is berating the captain Peseg for not providing rations to the workers at the necropolis, a matter she has already written to him about: ‘what’s this about the personnel of the...noble necropolis...? I wrote to you saying, ‘Give them rations,’ ... that you haven’t yet given them any’ (Wente 1990, 200). She demands that upon receipt of this letter Peseg looks for the grain she wrote about and gives the men their rations. The conclusion of the letter is fragmented but she demands ‘don’t ....complain to me again. Have them prepared...’ indicating a previous correspondence not to her liking (Wente 1990, 201).

The sender Herere was related to the general Piankh who was a major figure at Thebes, assuming high office there while Ramesses XI was still officially Pharaoh. In a letter dated to year ten of the Renaissance she is noted as being in Elephantine and it is possible that this letter was written during this time. Given his responsibility for providing rations to the ‘noble necropolis’ it would appear that the troop captain Peseg was stationed close by at Thebes.

This is a failure to obey the orders of a superior on the subject of provisions, and is an 'unsatisfactory state of affairs' due to the recipient's failure to act on a previous order. The introductory formula is of the form sender to recipient without the use of *ḏd/*says, appropriate to the high status of Herere over and above a mere troop captain. There is no preamble of the complimentary kind. The structure is in the form of a question, 'what's this about', introduced by the interrogative *jḫ,* followed by a series of direct orders to rectify the situation. Her opening question is not looking for any explanation or justification. It is the prelude to a series of orders – 'look for grain, give it to them' – with the reference to the previous letter couched in the same terms: 'I wrote to you saying Give them rations'. There is no complimentary introductory preamble as a tactic to smooth the way. As a principal of the harem of Amon-Re she is exercising her authority to command Peseg to follow her orders. The brevity of the letter is consistent with the command of someone of higher authority.

From this letter the importance of food supply is apparent and the hierarchy within the social structure is shown: her position, although a woman, allows her to address a male troop captain in this way. She is a principal of the harem of Amon-Re and as such has the authority to command Peseg to do as she has bidden. The manner in which Herere writes confirms the authoritative nature of her position and that Peseg has been insubordinate in questioning her previous command. The letter also shows the responsibility that the position of troop captain commands in terms of welfare for the personnel of such an important location and could be seen as confirmation of the military control at Thebes of this time.

From a more general point of view these letters of complaint have all clearly been motivated by 'a state of affairs which is unsatisfactory', in which the recipient has done, or failed to do, something that the sender of the letter wants him to rectify. The manner in which a complaint can be expressed has been shown to vary. In the first and second letters the complaints are couched in the form of questions, asking why the recipient has acted in this way, and with instructions for sorting out the problem. The third and fourth letters, however, are a factual declaration of circumstances, while the fifth letter is another complaint in the form of a question with its following request for rectification.

The subjects of the complaints differ, and while these examples do not cover all the reasons for writing exemplified in other correspondence which falls under this topic heading, they are an indication of what people felt was just reason for complaint. Emotions and issues regarding religious beliefs and adherence to *Ma'at* were not the primary *raison d'être* for writing—first and foremost they were written to rectify what the sender considered a wrongdoing. However, the tone of the letter can be seen as an incentive to the recipient to take action, such as the use of flattery, in an official style, and the use of forceful wording. These different approaches can be associated with the relative status of the sender and recipient and the relationship between them. Studies of the collection of Late Ramesside Letters have also provided in-depth analysis of the superior/subordinate interaction with regard to status and politeness (Ridealgh 2013, 184–203; Sweeney 2001, 232–241). Similar interaction and the expression of emotion continue to appear in letter writing from the later Greco-Roman period, which has been a focus for study as well (Clarysse 2009). Additionally, the examples discussed here indicate that, unlike letters which come under the other topic categories and are primarily conveying information or enquiring after the recipient's health and well-being, letters of complaint are not rhetorical in this way but require active action from their recipient. However, it appears that while the recipient was expected to take action, he or she was not requested or seemingly obliged to respond in confirmation that they had done so.

From examining these five letters it has been possible to establish societal information relevant to their respective periods. Four of these letters are concerned with practical matters, and of these four, two are concerned with the supply of provisions and two with bureaucratic mistakes. The first piece of correspondence gives insight into the personalities and friction within a general's family and his urgent need to supply provisions of barley to his household, possibly reflecting a time of severe shortage in the early Middle Kingdom and the risk of famine. In addition, the reference to transport by barge illustrates the importance of the Nile as a means of contact and supply. The letters from the Ramesside period reveal the differences in administrative structure under the mayor of Elephantine's jurisdiction, and the importance of honey in the divine offering. Both provide an example of bureaucratic involvement in local administration and the mistakes that had to be dealt with. The brief Late Ramesside note shows the involvement of military responsibility within everyday requirements, in this case the supply of food to necropolis workers, and the hierarchy in place that allowed a woman to address a troop captain. However, the piece of correspondence dated to the eighteenth dynasty is the exception. It differs by being a more personal and emotional complaint, dealing as it does with the removal of a child from the care of the writer. This letter is of a more familial nature, looking at a problem arising from domestic responsibility.

In terms of style the letters structured as questions show differing interrogative grammatical structures according to their period. In these letters the questions are introduced by *jn ir, ḥr m* and *jḫ* respectively. The modes of address for each letter have differed across the timeframe in accordance with the subject matter and/or status of the senders and recipients. The Middle Kingdom letter from the general Nehsi, despite the urgency of the complaint, uses a more formal and elaborate greeting asking after the recipient's well-being and invoking the gods which could be occasioned by the respect due to a familial relationship or as flattery to ensure attention to the complaint. The eighteenth dynasty address is without an elaborate greeting, in the form 'what says' the sender to the recipient, normally used for business correspondence, but here it appears to indicate the expression of a personal concern. In the Ramesside examples Meron addresses the chief taxing master in a way used for people of very high rank, placing his name as recipient before Meron's and additionally using the 'complimentary preamble' due to the importance of his complaint and the status of the recipient. The sender of the complaint regarding the wrongful delivery of ointment instead of honey addresses his letter in a similar fashion. Both are concerned to have their complaint rectified but without antagonising their recipient. In the final letter from the Late Ramesside period there are no pleasantries and the form is just in the style sender to recipient in accordance with the commanding content and the status of the sender.

The changes in the epistolary style of the personal correspondence up to a point has equated with the historical periods and is helpful in assessing an approximate dating for the letters themselves, although there is a certain amount of crossover, with an earlier style not being totally rejected by later writers. Baines and Eyre postulated a literacy quotient for the general population during the Old Kingdom of only 1%, (Baines and Eyre 1983, 65–72) and because of this continuing questionable standard of literacy, plus the fact that the sender uses opening words such as 'says', 'communicates', 'sends a communication', 'addressed by', it is presumed that in most cases the sender of a letter used the services of a scribe. In one case only among the letters selected for this paper, that from Ahmose, has the sender been a scribe and therefore penned the letter himself. The recipient would have had it read to him by his own scribe or a literate intermediary. It is interesting to speculate whether the sender of the letter was able to read the communication to check that he or she was being accurately recorded. Perhaps the scribe did his own 'editing' to make the letter more forceful (or indeed less so).

For the purposes of this paper the translations are primarily from Wente (1990). There have been differing opinions regarding translation and interpretation, given the condition of the primary sources and individual viewpoints. It has not been possible, due to the length of this paper, to detail and discuss in depth these points with reference to the texts discussed here. However, a study of the relevant hieroglyphs and transcriptions (Ćerný 1939; Gardiner 1948a; James 1962; Peet 1926; Posener-Kriéger 1978), has enabled commentary on the writings to enhance understanding and indicate possible differences in interpretation relevant to the overall meaning from which the information and conclusions have been drawn.

Only a small sample of the personal correspondence that exists within this topic has been considered, but it has provided insights into the similarities and differences in the reasons for complaint, and the differing ways in which these complaints could be expressed and structured depending on the status and relationship between sender and recipient. Information regarding social structure, customs, personalities, and problems within the spectrum of the historical timeframes has also been discerned, and these aspects will form the basis for future, more in-depth study. However, overall this paper shows the importance of private letters as a primary source for social history in ancient Egypt.

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